SERVICE MANUAL

CLATRONIC

COLOUR TELEVISION 90° - 110°

CHASIS F-16

CTV 2870
CTV 287 F
CTV 317
CTV 346
CTV 421

INTRODUCTION

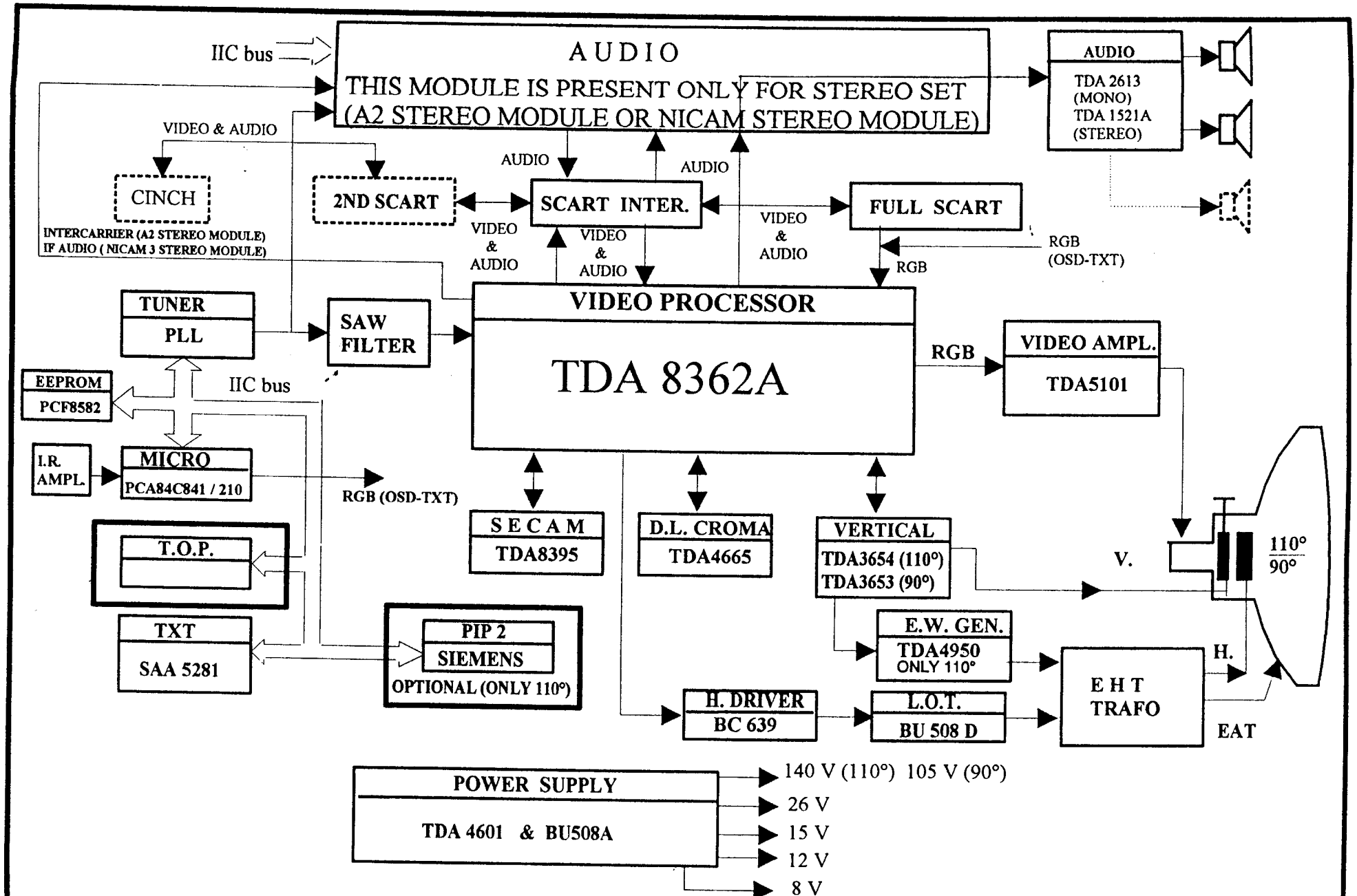
Present chassis is suitable for both 90° and 110° picture tube.
The television is built up around a high-volume integration integrated circuit TDA 8361/2A, a new processor for PAL and NTSC system television.
This TDA 8361/2A processor combines all the small signal functions required of a colour television receiver, including operation of an external video and audio of a S-VHS (separate Luminance and Chrominance).
Processor TDA 8361/2A is a video processor containing functions handling HF, sound, horizontal and vertical synchronisation, PAL/NTSC decoding, and RGB control and a black current stabilisation circuit.
It was implemented using BIMOS technology, which combines BIPOLAR methods for handling high-frequency signal and MOS methods for handling digital parts.
In additions it used an integrated delay line TDA 4665, an audio output stage mono, stereo 6+6W, a vertical output stage TDA 3653 (90°) or TDA 3654 (110°), an a horizontal output stage with BU 508D.
The power supply unit is of the flyback type and controlled by the TDA 4601 integrated circuit.
For 110° picture tube E-W correction is realised by using TDA 4950 that is not present on the 90° picture tube version.

Principal functions common to both processor version TDA 8361/2A are :

- symmetric IF amplifier directly coupled to surface wave filter
- FM sound multistandard demodulator, not needing regulation
- chroma trap and integrated band-pass filters
- integrated luminance delay line
- PAL/NTSC automatic decoder
- self-regulation horizontal oscillator
- low dissipation (about 700 mW)
- possibility of selecting an external A/V source
- no black-level adjustment due to a black current stabilizer

Functions specific to TDA 8362A :

- Multistandard IF circuit for positive and negative modulation
- simple interface with TDA 8395 (SECAM decoder) for PAL and SECAM multistandard applications.



F16 BLOCK DIAGRAM

ALIGNMENT

38.9 Mhz and AFC

Connect a 38.9 Mhz intermediate-frequency generator to the tuner's IF output pin 17 and adjust the core L 4 so as to obtain 4,5 V at pin 9 of TDA 8361/2A.

POWER SUPPLY

Measure the direct voltage at the terminals of diode DJ1 or D 38 and potentiometer R 162 so as to obtain a voltage of 105/110 V. (90°) 142/152 V. (110°).

AGC

Apply a 60dBuV (+/- 1 dB) RF signal, band III, channel 10-to-12, and adjust potentiometer R 111 so as to obtain a voltage of about 8V at tuner pin no. 5 (This voltage depends on the tuner used; so check on the letter's characteristics).

WHITE SETTING

ADJUSTMENT WITH ANALOGUE VOLTMETER

- Power on TV SET
- Tune to a signal with white screen
- Contrast control set to minimum
- Adjust brightness to 2,5 V.D.C. on pin 17 TDA 8361/2A
- Analogue voltmeter 200 V.D.C. full scale
- Check for the highest P.T. cathode voltage than adjust it for 165 V.D.C. via G 2 potentiometer (on E.H.T. transformer)

VERTICAL CENTRING

- Adjust R 194 (VA) for proper vertical height
- Adjust R 192 (VL) for proper vertical linearity
- Cut/solder the R 215 and/or R 216 and/or R 257 in order to obtain the right vertical geometric centring between CRT and signal (for example, use a test-pattern signal)

HORIZONTAL CENTRING AND EAST-WEST CORRECTION (110° ONLY)

- Adjust R 186 (HC) for proper horizontal centring
- Adjust R 205 (HA) for proper horizontal width
- Adjust R 200 (OW) for proper pin-cushion
- Adjust R 203 (TZ) for proper trapezium

A2 STEREO MODULE

Apply to the TV antenna input connector a TV signal with audio stereo (R = 3 KHz L = 1 KHz) from a generator, or alternatively, tune a TV channel with stereo transmission.
Adjust the coil L 1 to obtain the maximum level of signal at IC TDA 9840 pin 5.

Adjustment of VR 1 (stereo dematrixing).

For this adjustment only stereo signal generator should be used.
Connect the scope probe at pin 1 and 3 of TDA 8425. Eliminate modulation tone of the left channel, adjusting trimmer VR 1 for the minimum level signal on the right channel (pin 1 of TDA 8425).

Dual language decoding : verifier using a TV generator in a dual mode or tuning a TV channel with dual language program, verify the switching of a language by A/B button on the remote control and check the relative O.S.D. .

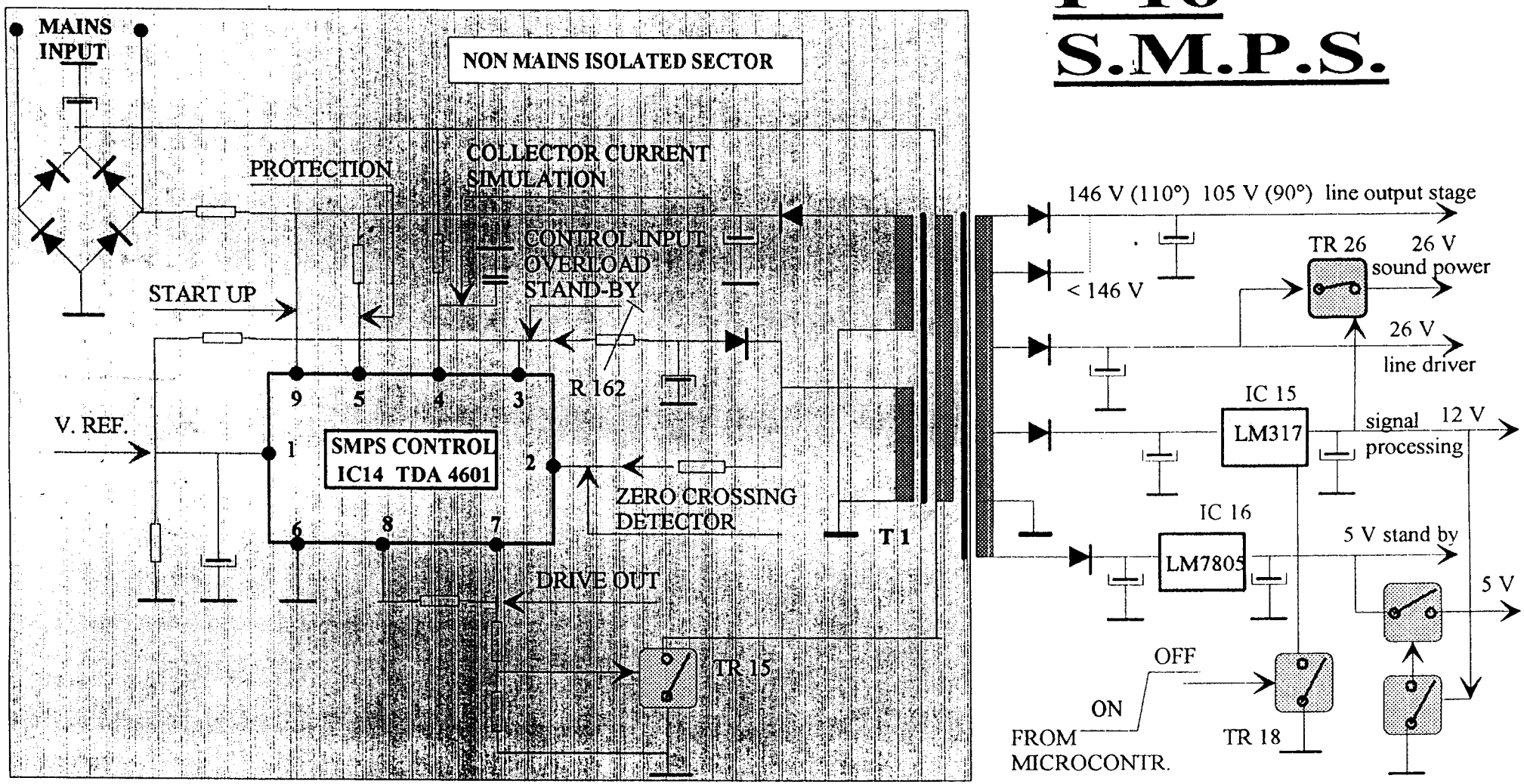
NICAM 3 DECODER

- Apply a Nicam signal to the TV antenna
- Connect a probe to pin 17 of IC 4
- Adjust L 3 to obtain the minimum video modulation
- Verifier on the pin 39 of IC 1 that there is 2,5 V DC (use a scope)
- Check voltages on pin SM 2 and SM 4 on the connector SM. The amplitude of this voltage should be 800 mV pp.
- Check signal on the loudspeaker, should be 20 Vpp with maximum volume

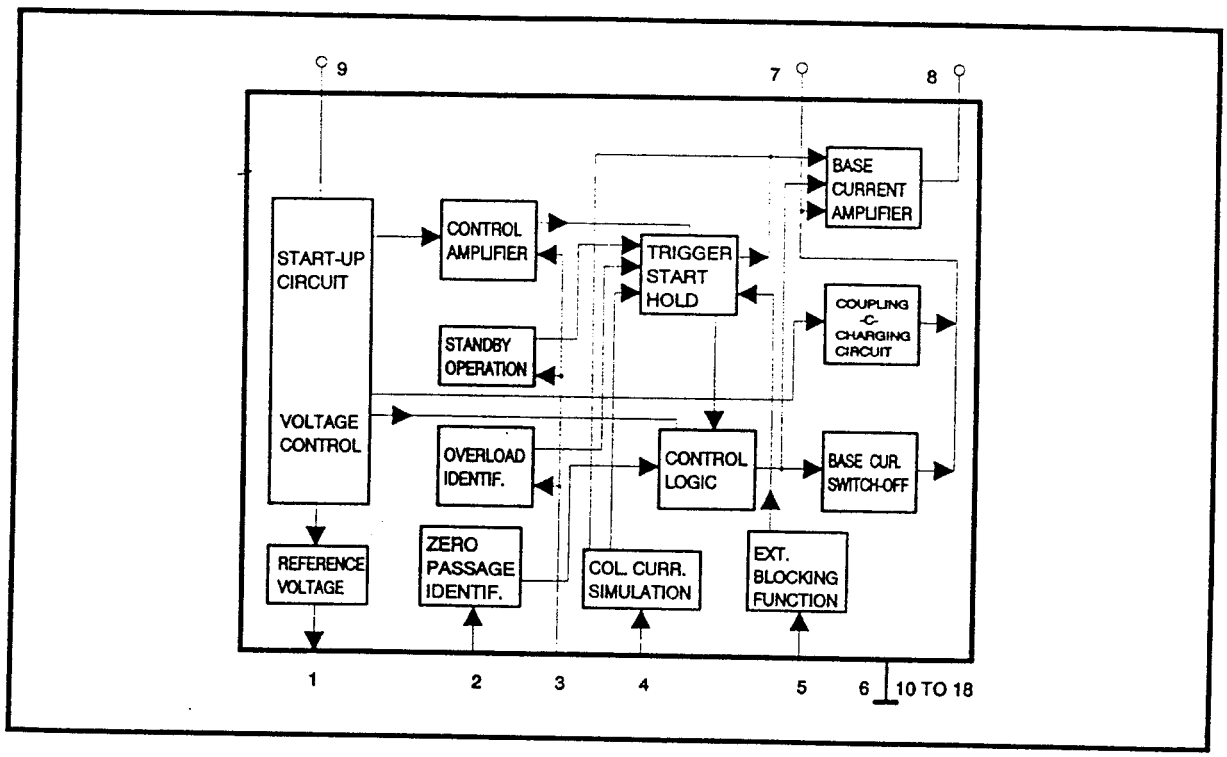
Non Nicam reception

- Using remote control activate NICAM-OFF push button
- Check with a scope the signal on SM 2 and SM 4 (SM connector) that should be 800 mVpp
- Switch the generator from NICAM to stereo signal
- Connect a probe on pin 6 of IC 3
- Adjust the coil L 2 to obtain the maximum level of signal (54 Khz)
- Switch off modulation tone 3 Khz, connect a probe on SM 4 and adjust R 40 for minimum tone at 1 Khz.
- Connect the modulation tone 3 Khz
- Verifier on contact SM 2 (left) and SM 4 (right) (connector SM) that should be 800 mVpp
- Check signal on loudspeaker, should be 20 Vpp with maximum volume

F 16
S.M.P.S.


MAINS INPUT
NON MAINS ISOLATED SECTOR
PROTECTION
COLLECTOR CURRENT SIMULATION
CONTROL INPUT
OVERLOAD
STAND-BY
START UP
R 162
9
5
4
3
V. REF.
1
SMPS CONTROL
IC14 TDA 4601
2
ZERO CROSSING DETECTOR
6
8
7
T 1
DRIVE OUT
TR 15
146 V (110°) 105 V (90°) line output stage
TR 26
26 V
sound power
< 146 V
26 V
line driver
IC 15
LM317
signal 12 V
processing
IC 16
LM7805
5 V stand by
5 V
OFF
ON
FROM MICROCONTR.
TR 18

POWER SUPPLY - TDA 4601

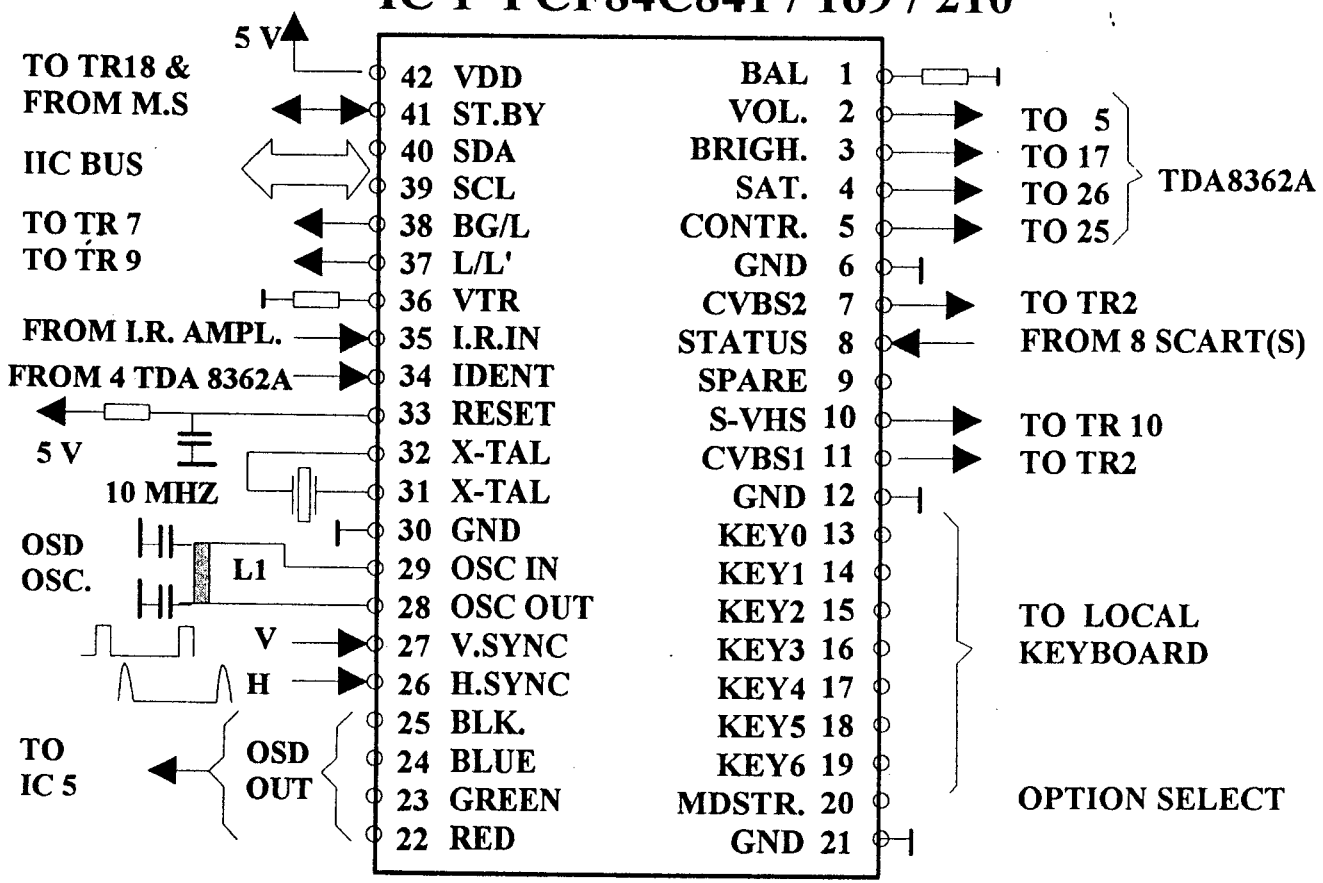


Functional Description.

Integrated circuit TDA 4601 is a switch-mode power controller that is particularly suited to TV use. It is able to directly drive a bipolar current with a base current of 1.2 A. It is a controller complete with all functions for normal operation, for transient operation (ex. soft-start), and for malfunction operation (protection against overload and shot-circuits).

F 16 MICROCONTROLLER AUTO-STORE

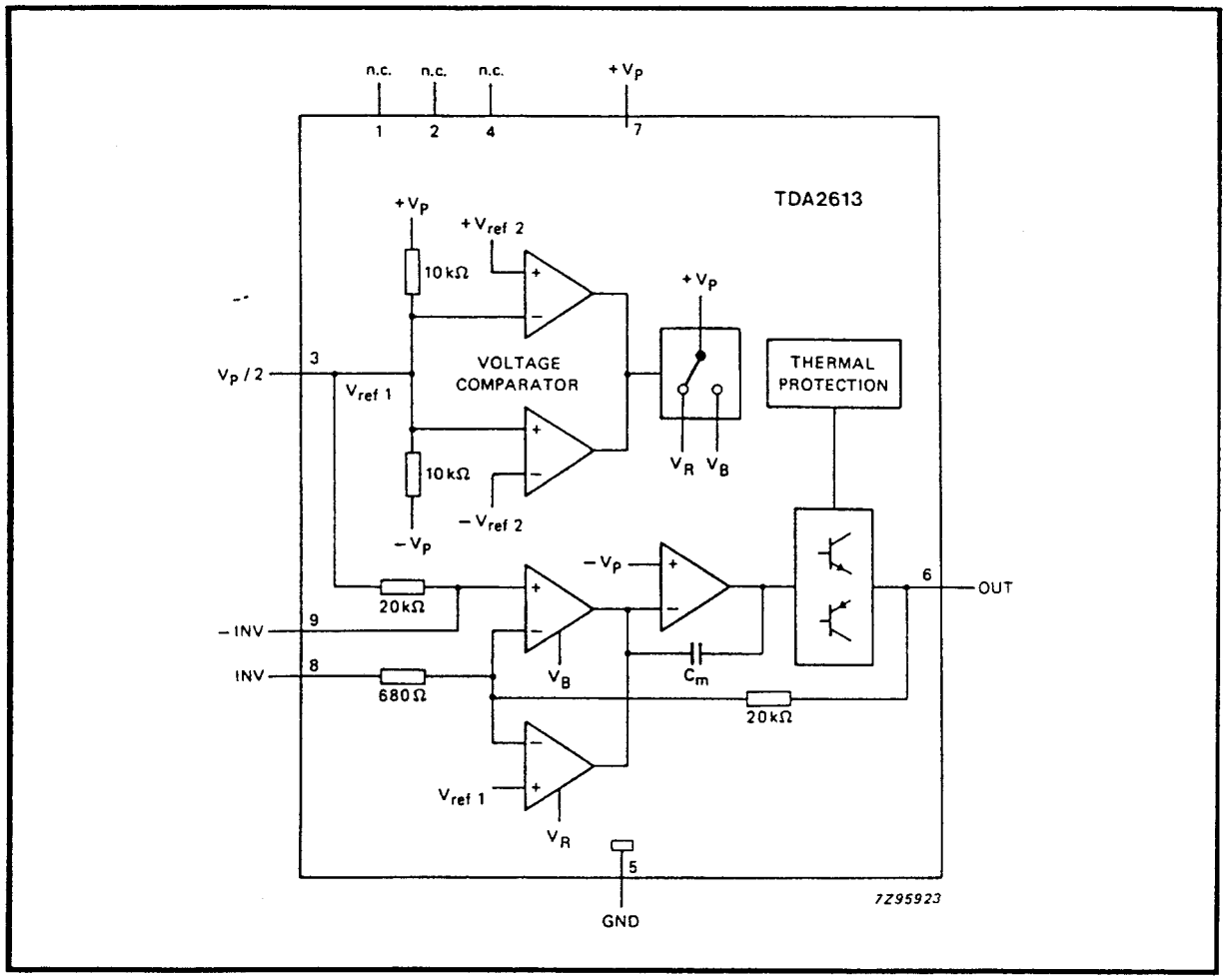
IC 1 PCF84C841 / 169 / 210



PCA 84C841/169 or 210 pinout description

1 output balance (not active for mono, stereo BG and nicam)
2 volume output (only mono and stereo from scart - not active for stereo BG and nicam)
3 brightness output
4 saturation output
5 contrast output (TRE-not active for mono, stereo BG and nicam)
6 bass output (not active for mono, stereo BG and nicam)
7 CVBS2
8 status
9 spare
10 S-VHS
11 CVBS1
12 RGB
13 input/output keyboard
14 input/output keyboard
15 input/output keyboard
16 input/output keyboard
17 input/output keyboard
18 input/output keyboard
19 input/output keyboard
20 strobe output
21 ground
22 OSD red output
23 OSD green output
24 OSD blue output
25 OSD fast blanking
26 horizontal synchro input
27 vertical synchro input
28 OSD LC oscillator
29 OSD LC oscillator
30 ground
31 xtal 10 Mhz oscillator input
32 oscillator output
33 reset
34 identification input
35 IR input
36 VTR
37 L/L'
38 BG/L or stereo
39 SCL IIC bus
40 SDA IIC bus
41 stand-by
42 power supply

N.B. For stereo BG and nicam TVC, volume, balance, treble and bass controls are handled in digital level in IIC bus.



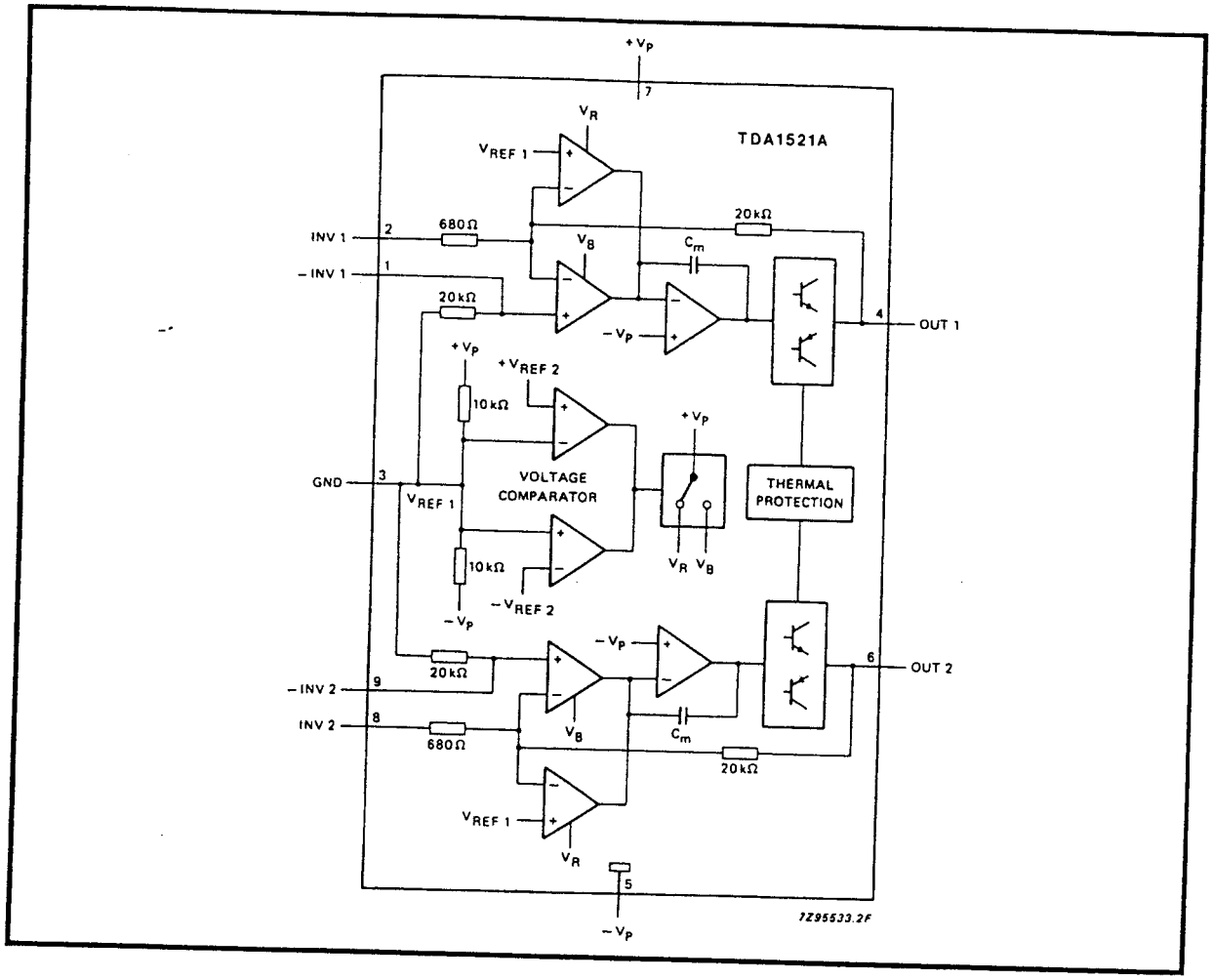
PINNING TDA 2613

1. not connect
2. not connect
3. ½ tension
4. not connect
5. ground
6. output
7. power supply
8. inverting input
9. non-inverting input

Functional description

TDA 2613 is a monophonic output amplifier. It requires no external component. It drives 16 Ohm speakers. Gain is set internally at 30 dB.

AUDIO 2x6W - TDA 1521A

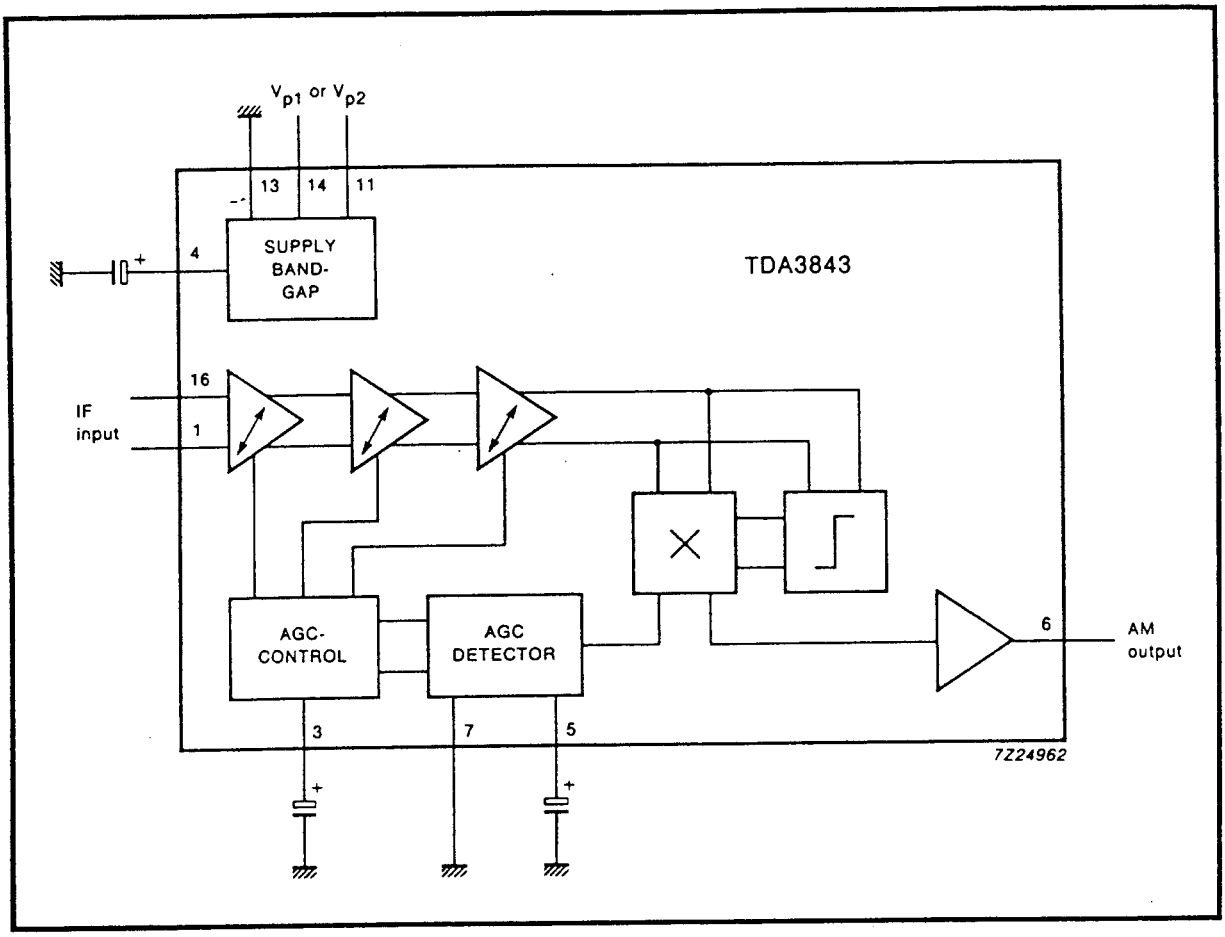


PINNING TDA 1521A

1. non-inverting input 1
2. inverting input 1
3. ground or ½ power supply
4. output 1
5. ground or negative supply
6. output 2
7. power supply
8. inverting input 2
9. non-inverting input 2

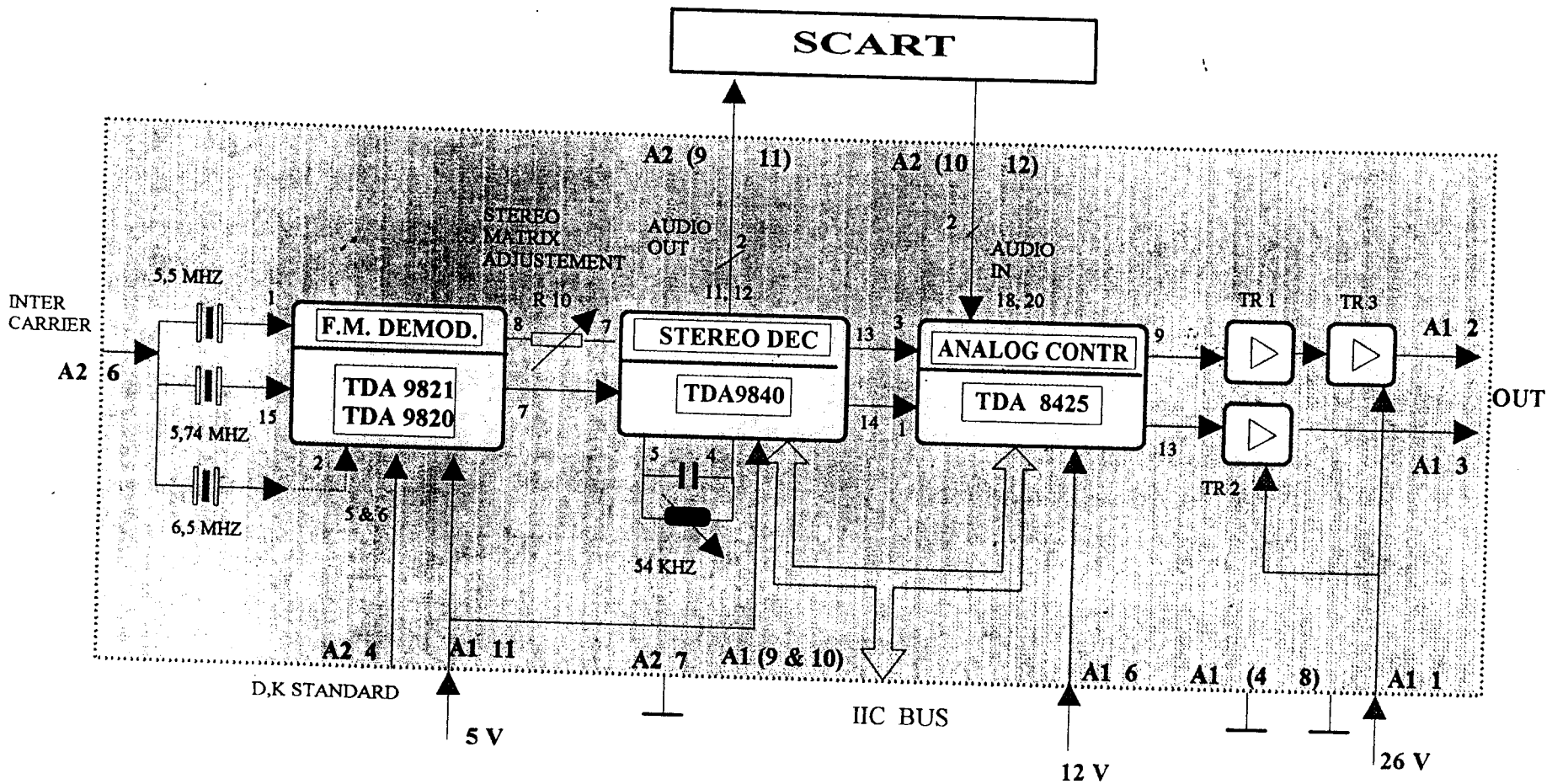
Functional description

TDA1521A is a stereophonic 2x6W audio output amplifier. Gain is set internally at 30 dB.



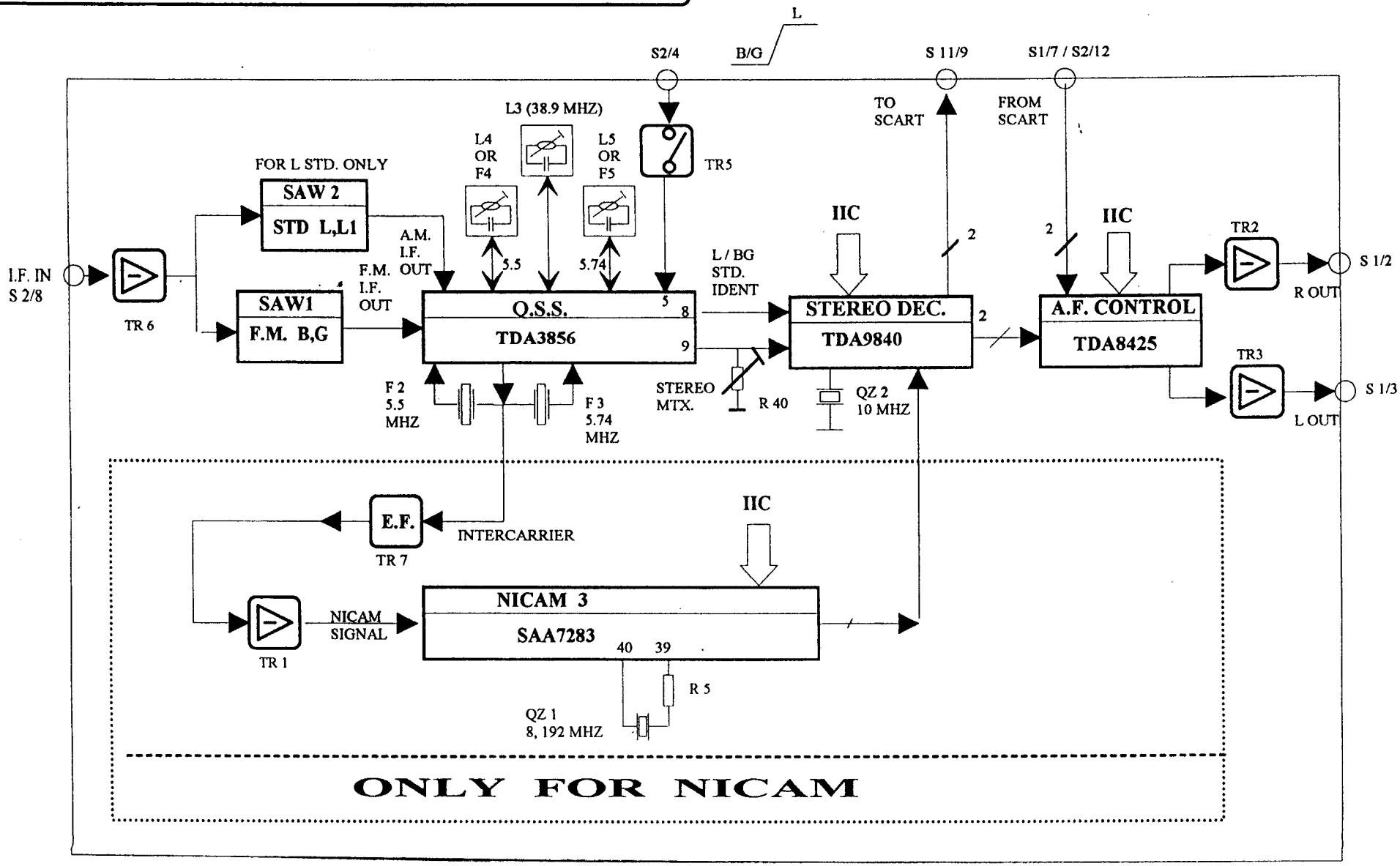
Functional description

TDA 3843 handles AM sound demodulation for standard L and L'.



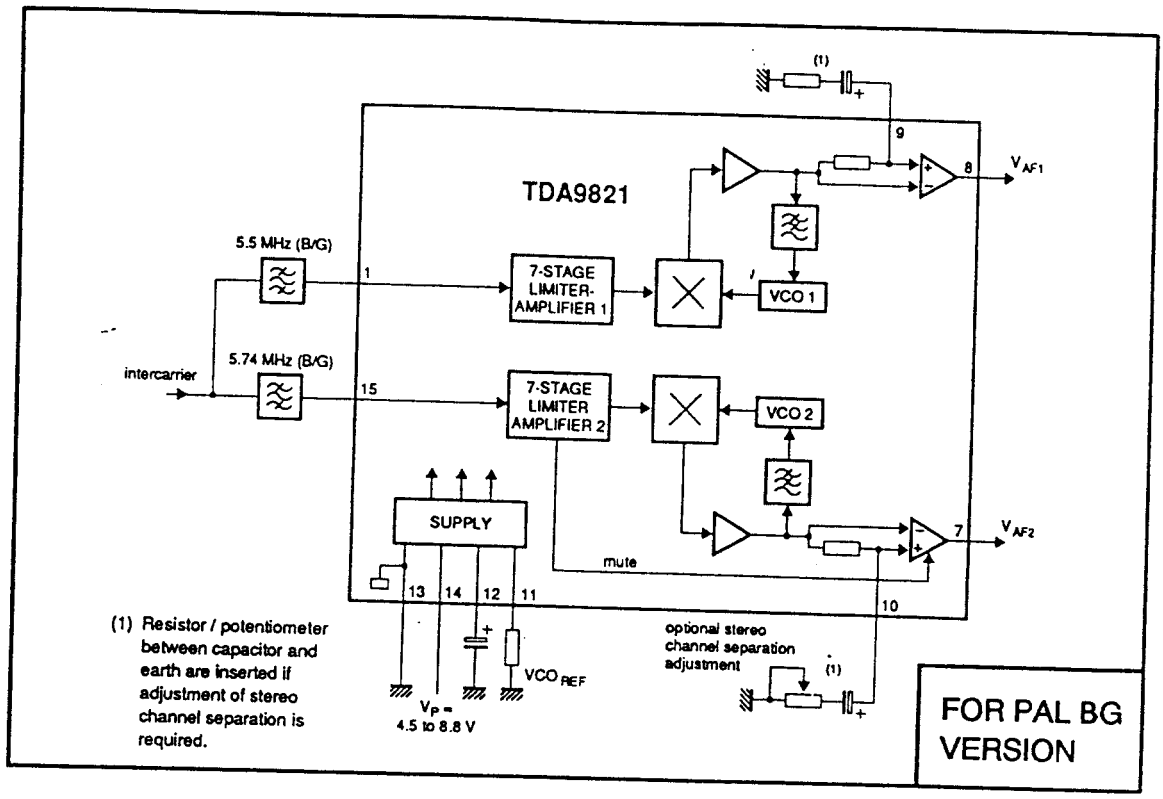
F16 STEREO A2 MODULE

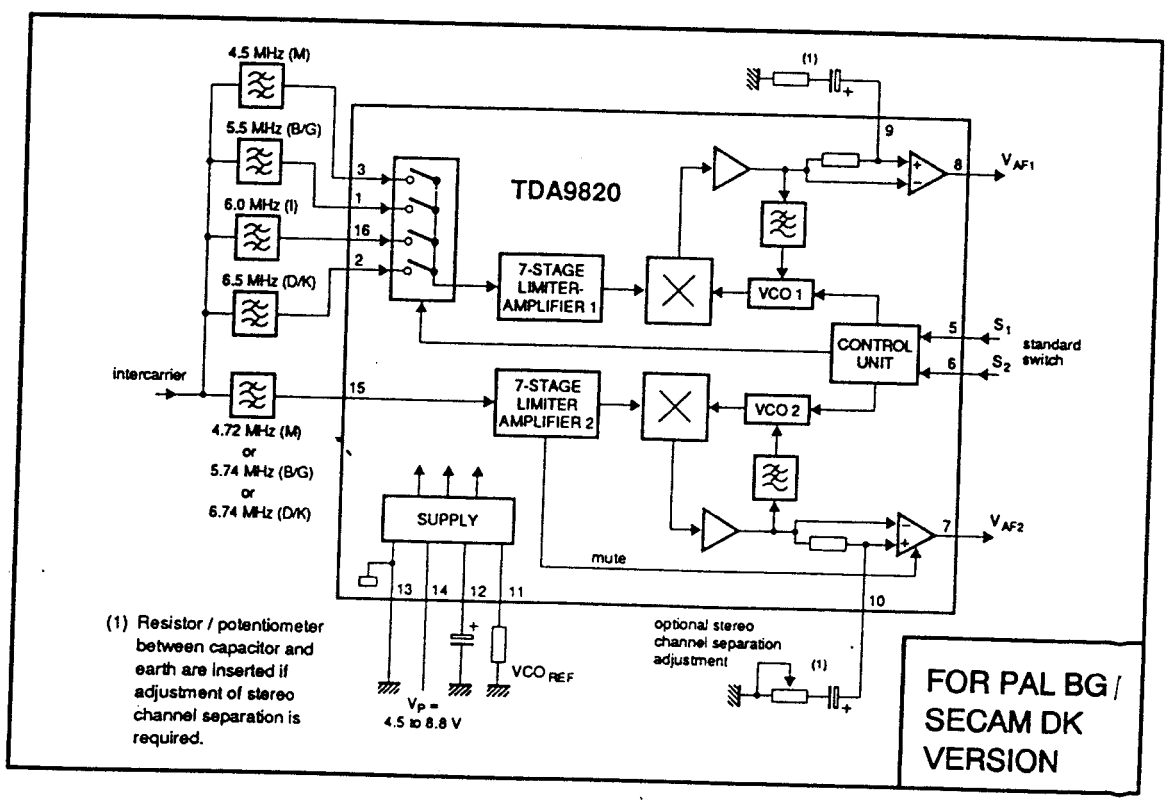
STEREO DECODER NICAM 3

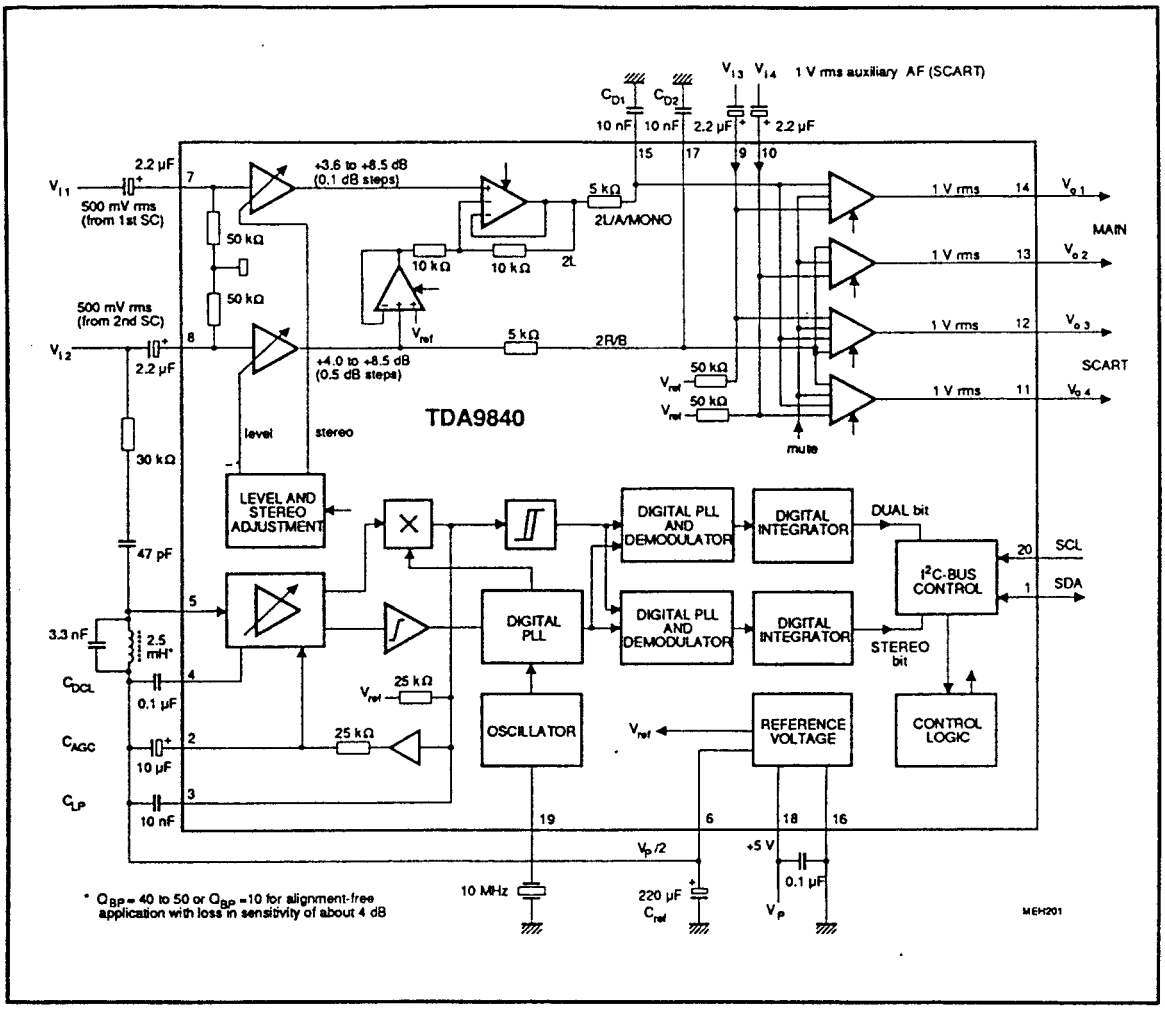


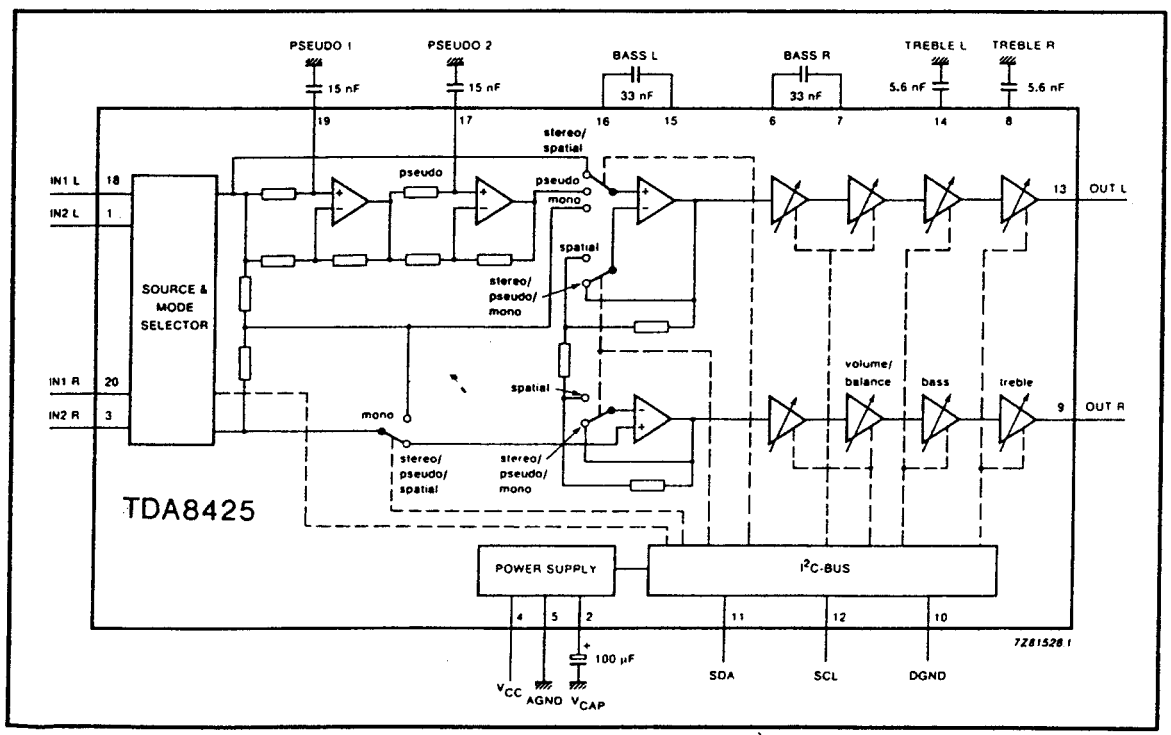
SUITABLE FOR ANALOGLUE & DIGITAL STEREO & MONO A.M.

A2 STEREO DECODER

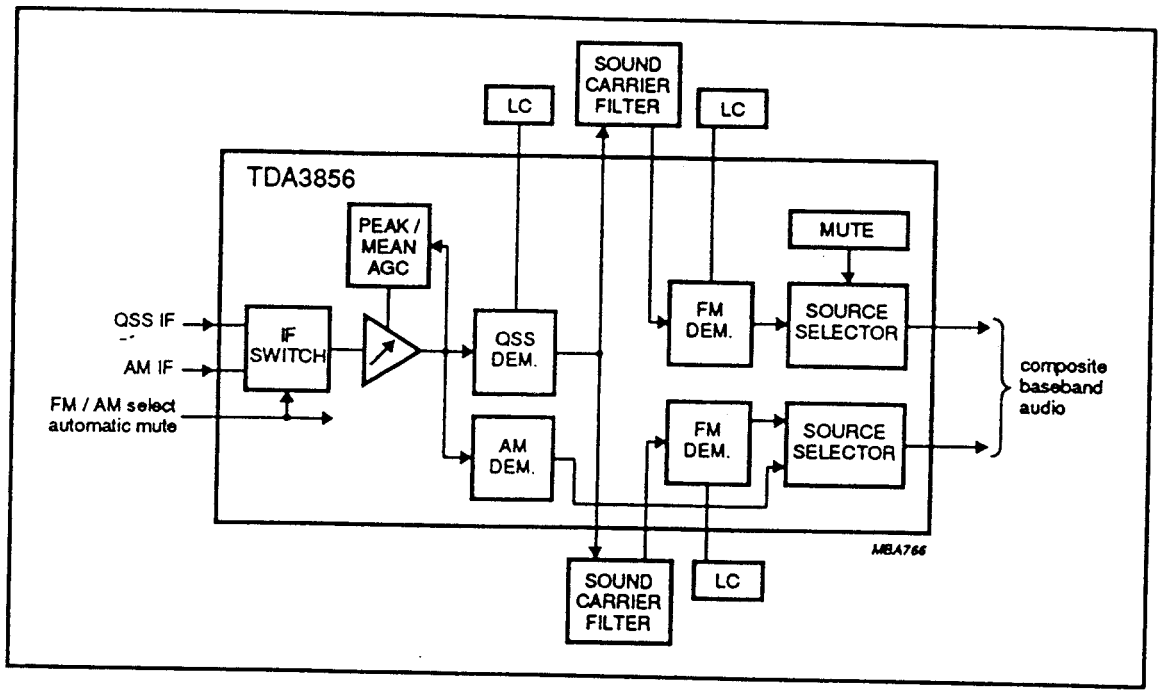


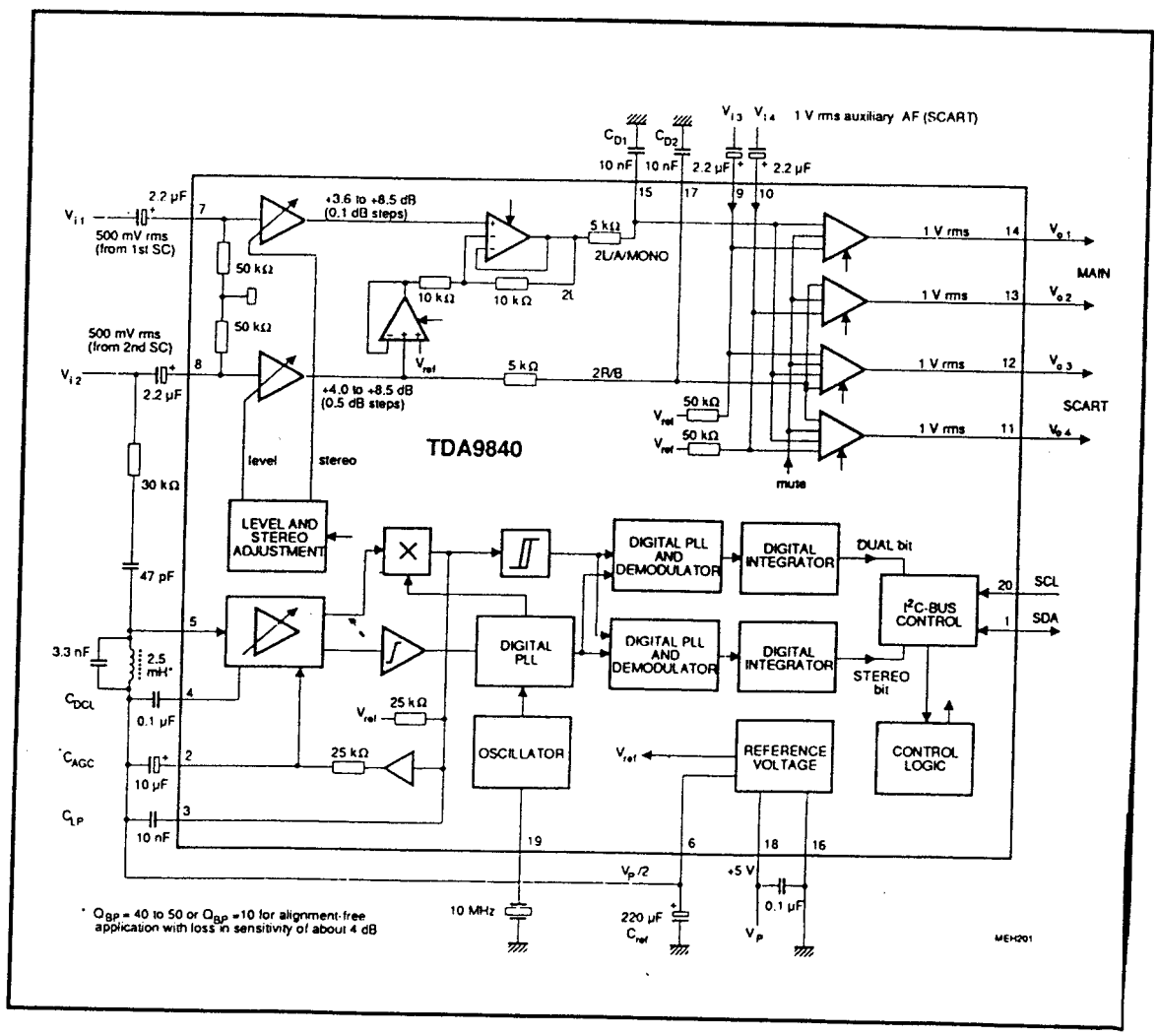


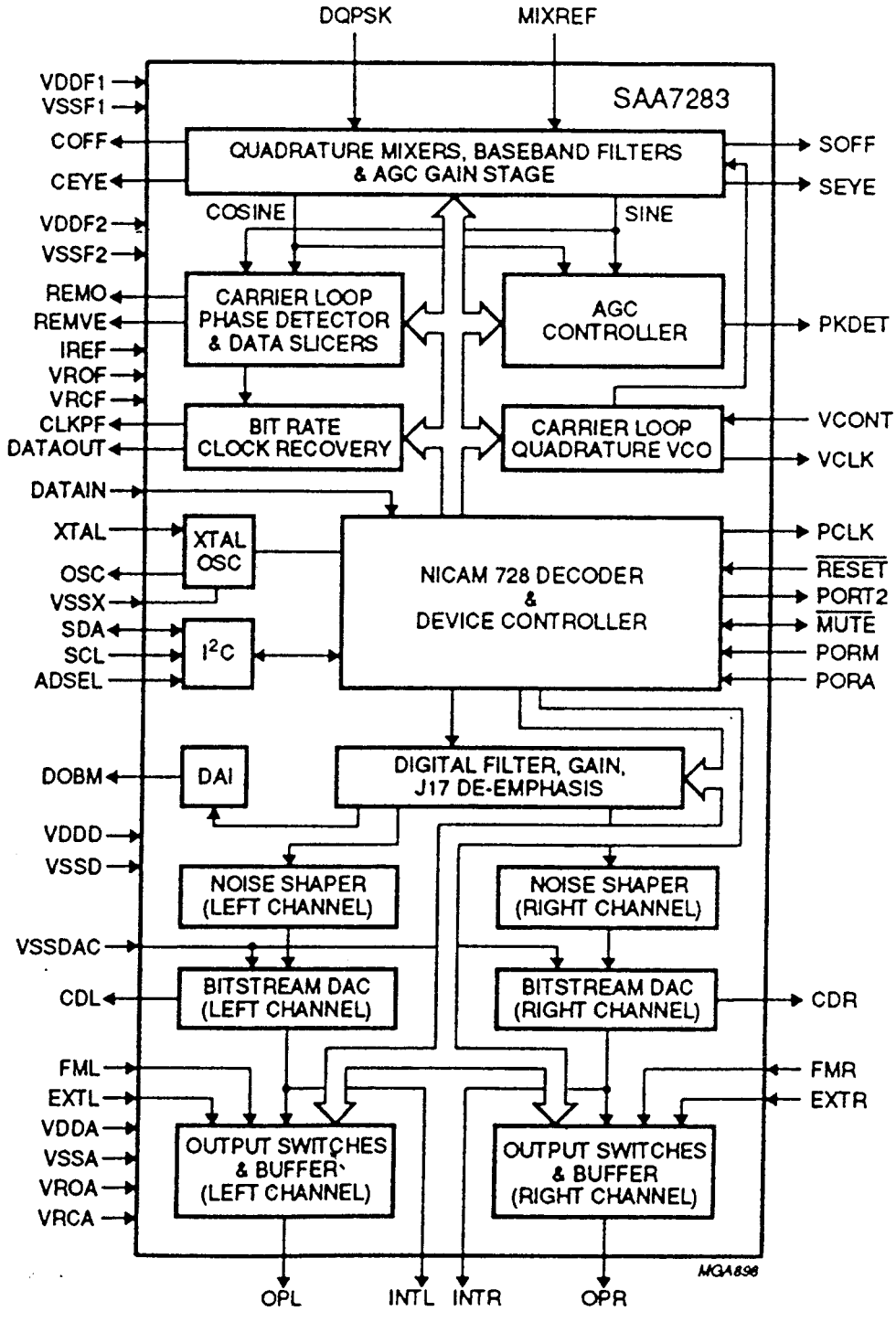

TDA9840
1 V rms auxiliary AF (SCART)
500 mV rms (from 1st SC)
500 mV rms (from 2nd SC)
+3.6 to +8.5 dB (0.1 dB steps)
+4.0 to +8.5 dB (0.5 dB steps)
2L/A/MONO
2R/B
MAIN
SCART
mute
level
stereo
LEVEL AND STEREO ADJUSTMENT
DIGITAL PLL AND DEMODULATOR
DIGITAL INTEGRATOR
DUAL bit
STEREO bit
I²C-BUS CONTROL
SCL
SDA
DIGITAL PLL
OSCILLATOR
REFERENCE VOLTAGE
CONTROL LOGIC
10 MHz
+5 V
MEH201
* Q_{BP} = 40 to 50 or Q_{BP} = 10 for alignment-free application with loss in sensitivity of about 4 dB

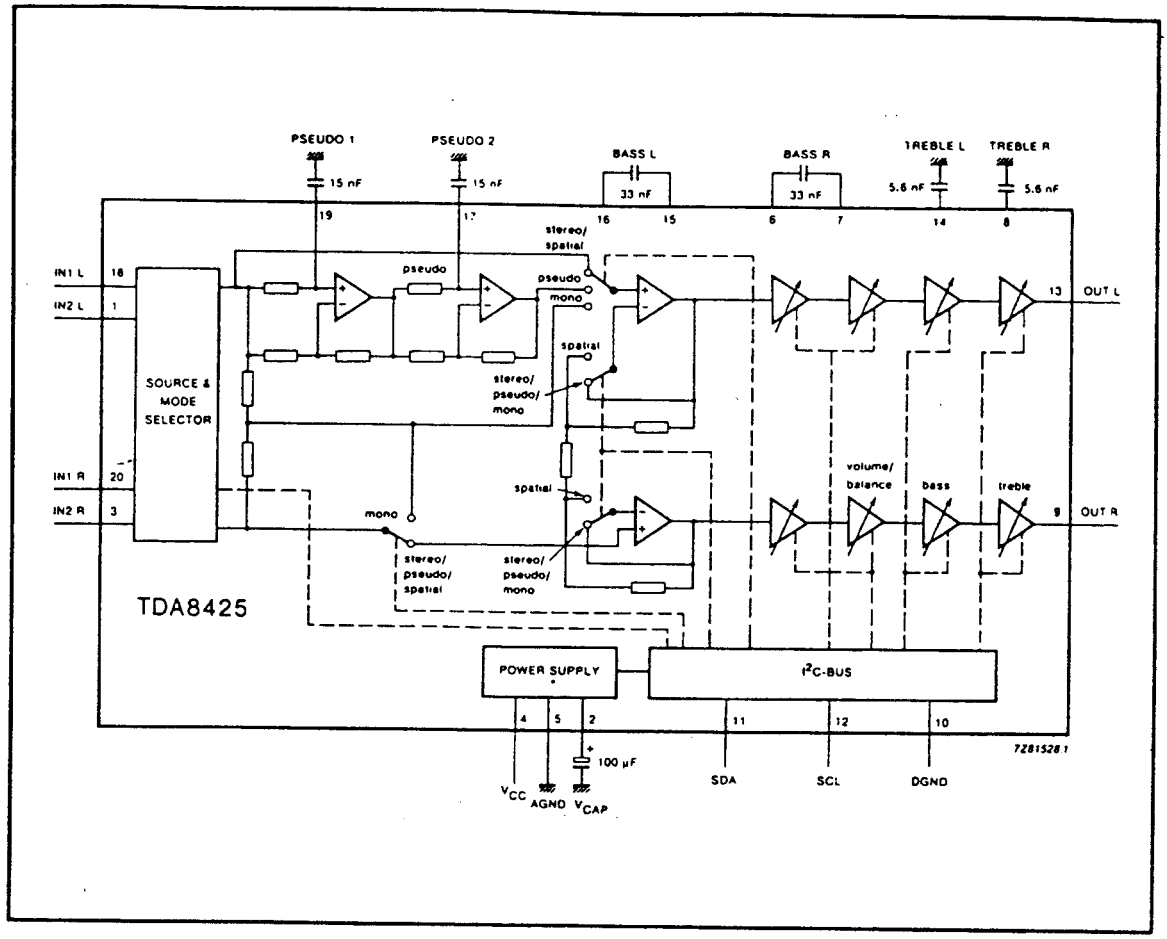

TDA8425
PSEUDO 1
PSEUDO 2
BASS L
BASS R
TREBLE L
TREBLE R
IN1 L
IN2 L
IN1 R
IN2 R
SOURCE & MODE SELECTOR
stereo/ spatial
pseudo
mono
spatial
stereo/ pseudo/ mono
volume/ balance
bass
treble
OUT L
OUT R
POWER SUPPLY
I²C-BUS
SDA
SCL
DGND
AGND
7Z81528.1

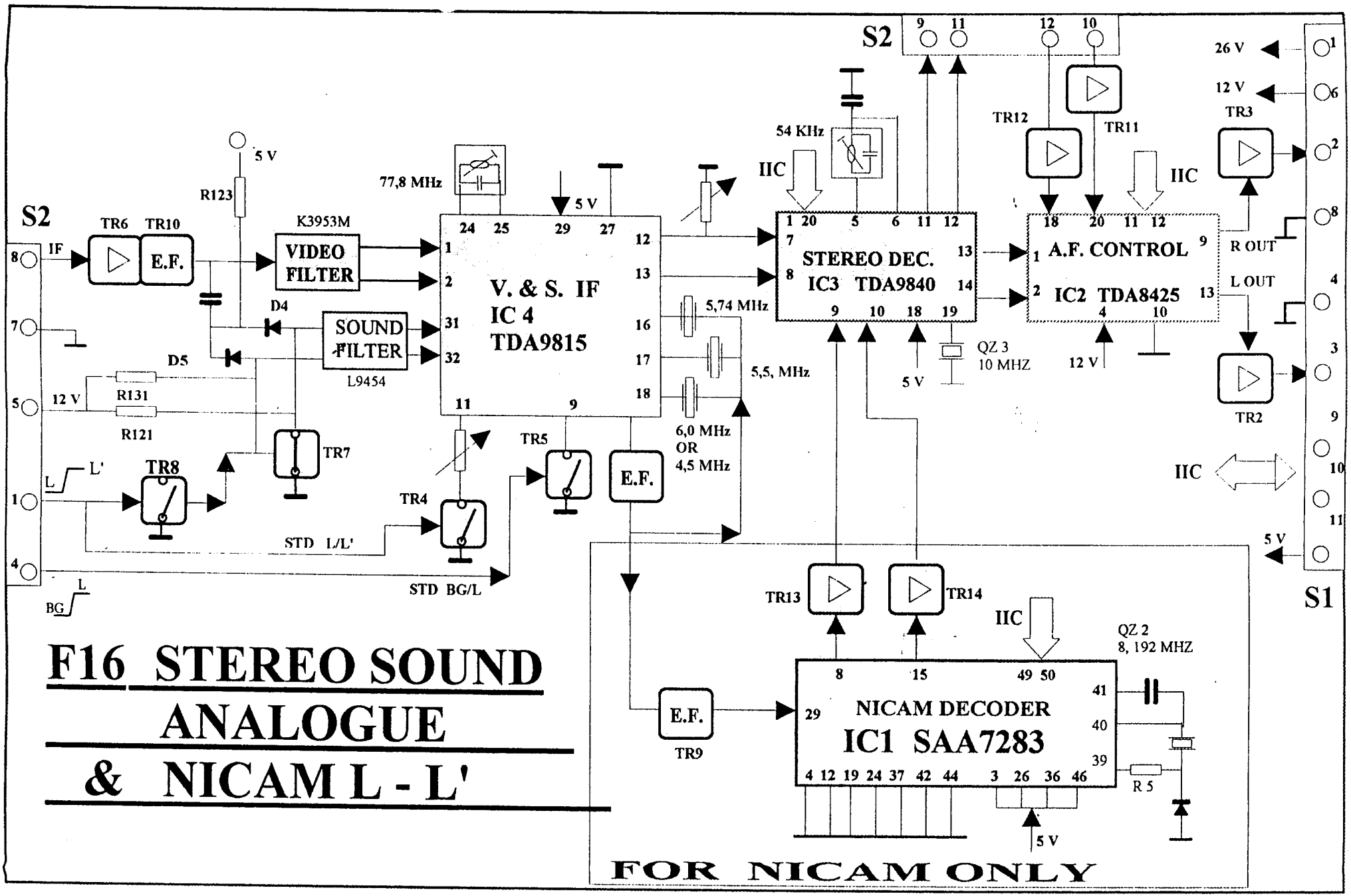
STEREO DECODER NICAM 3





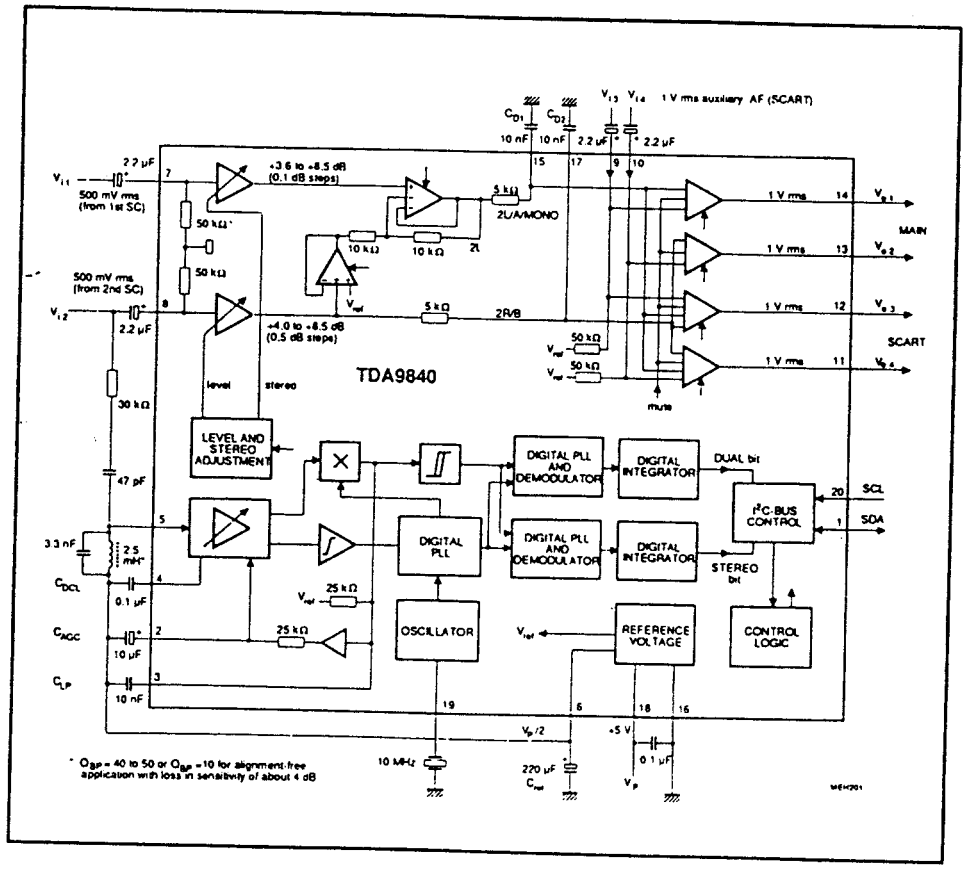

DQPSK
MIXREF
SAA7283
VDDF1
VSSF1
COFF
CEYE
QUADRATURE MIXERS, BASEBAND FILTERS & AGC GAIN STAGE
SOFF
SEYE
COSINE
SINE
VDDF2
VSSF2
REMO
REMVE
IREF
VROF
VRCF
CLKPF
DATAOUT
CARRIER LOOP PHASE DETECTOR & DATA SLICERS
AGC CONTROLLER
PKDET
BIT RATE CLOCK RECOVERY
CARRIER LOOP QUADRATURE VCO
VCONT
VCLK
DATAIN
XTAL
OSC
VSSX
SDA
SCL
ADSEL
XTAL OSC
I²C
NICAM 728 DECODER & DEVICE CONTROLLER
PCLK
RESET
PORT2
MUTE
PORM
PORA
DOBM
DAI
DIGITAL FILTER, GAIN, J17 DE-EMPHASIS
VDDD
VSSD
NOISE SHAPER (LEFT CHANNEL)
NOISE SHAPER (RIGHT CHANNEL)
VSSDAC
CDL
BITSTREAM DAC (LEFT CHANNEL)
BITSTREAM DAC (RIGHT CHANNEL)
CDR
FML
EXTL
VDDA
VSSA
VROA
VRCA
FMR
EXTR
OUTPUT SWITCHES & BUFFER (LEFT CHANNEL)
OUTPUT SWITCHES & BUFFER (RIGHT CHANNEL)
MGA896
OPL
INTL
INTR
OPR

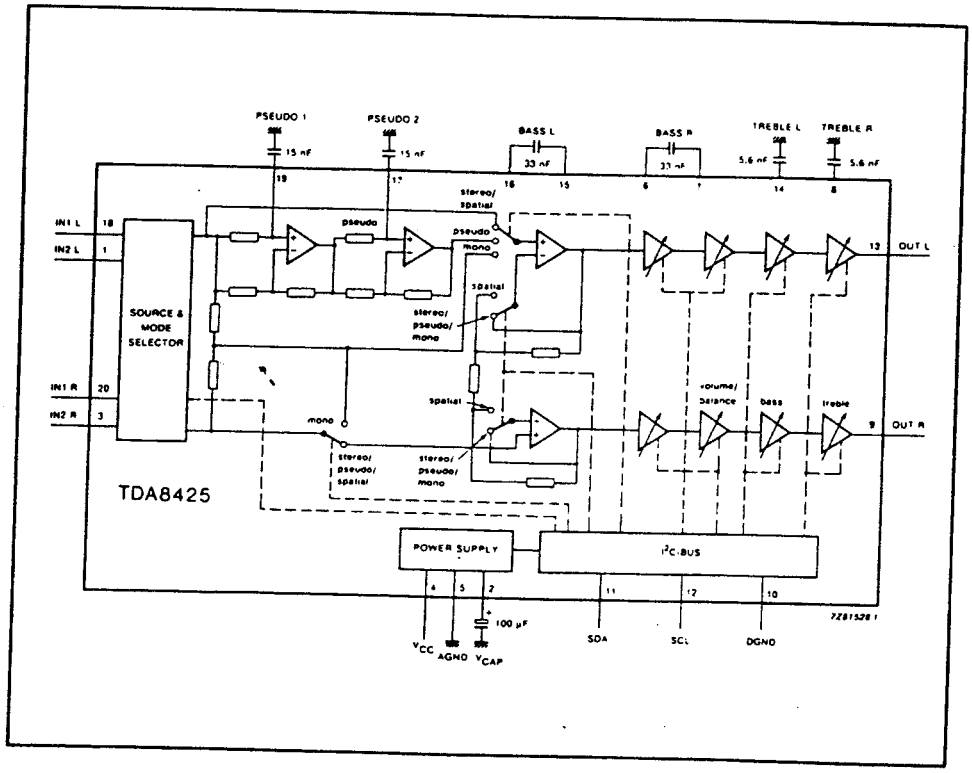

PSEUDO 1
PSEUDO 2
BASS L
BASS R
TREBLE L
TREBLE R
15 nF
15 nF
33 nF
33 nF
5.6 nF
5.6 nF
IN1 L
IN2 L
IN1 R
IN2 R
SOURCE & MODE SELECTOR
pseudo
mono
spatial
stereo/ pseudo/ mono
stereo/ pseudo/ spatial
volume/ balance
bass
treble
OUT L
OUT R
TDA8425
POWER SUPPLY
I²C-BUS
100 µF
SDA
SCL
DGND
VCC
AGND
VCAP
7Z81528.1

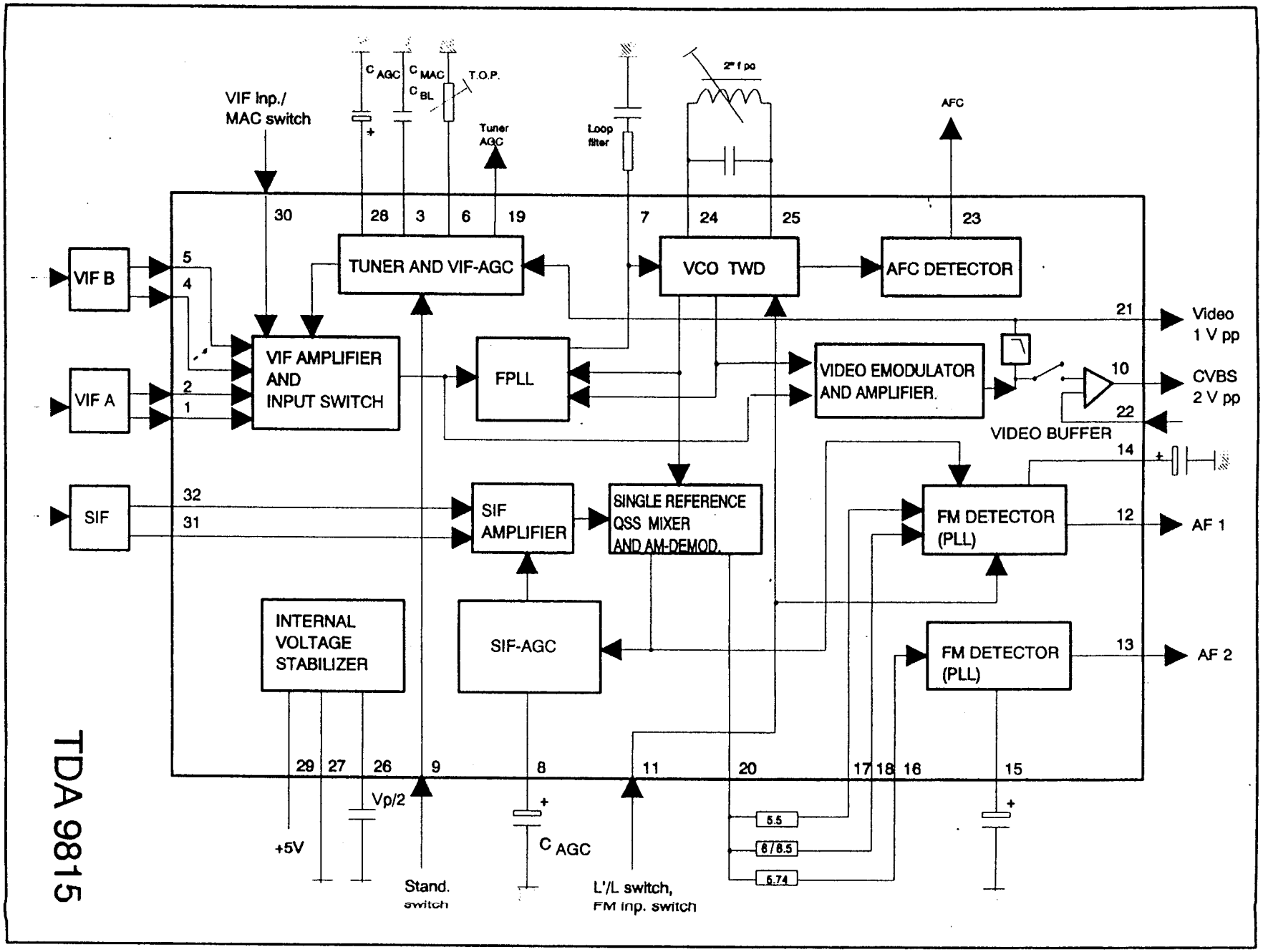


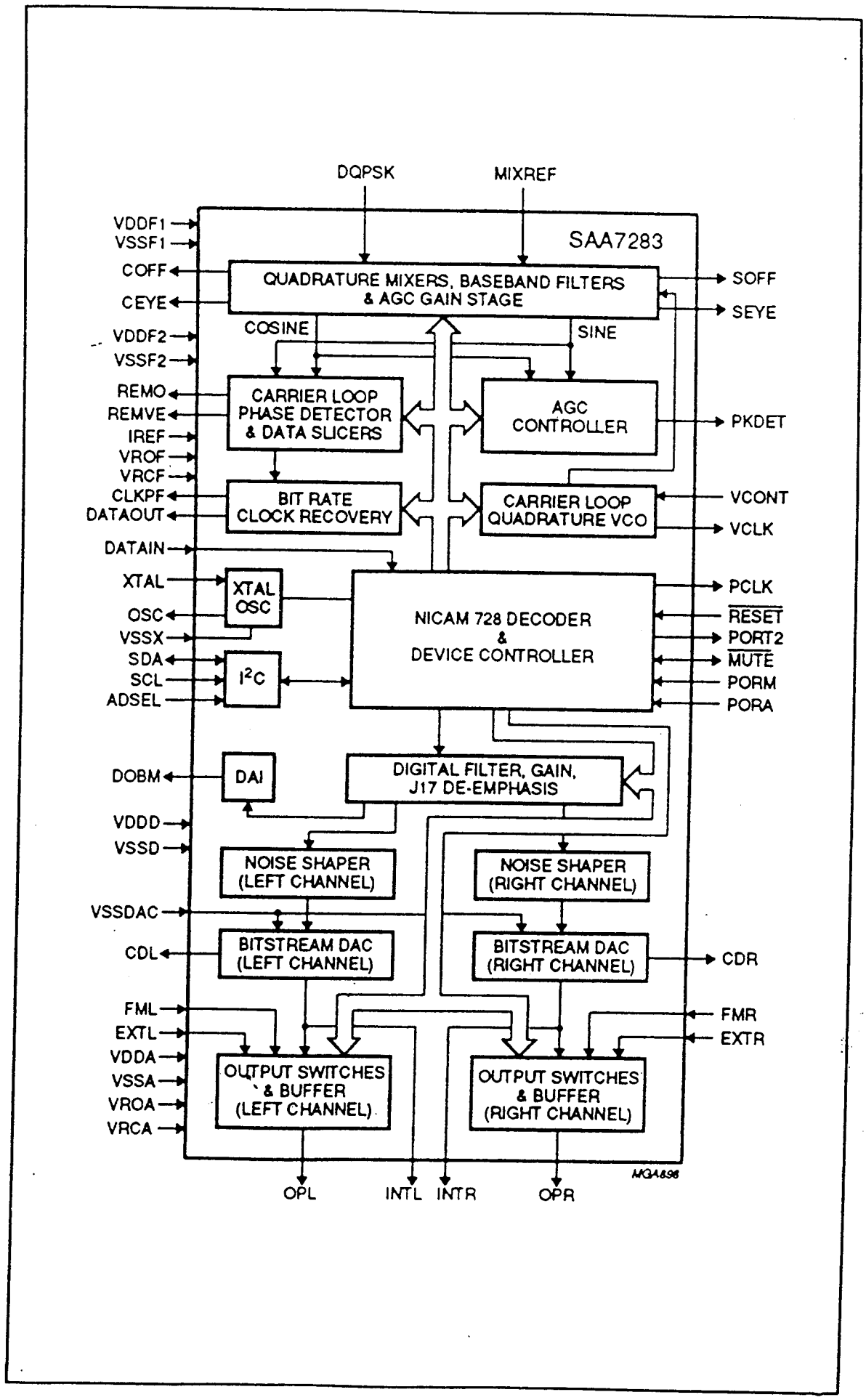
F16 STEREO SOUND ANALOGUE & NICAM L - L'

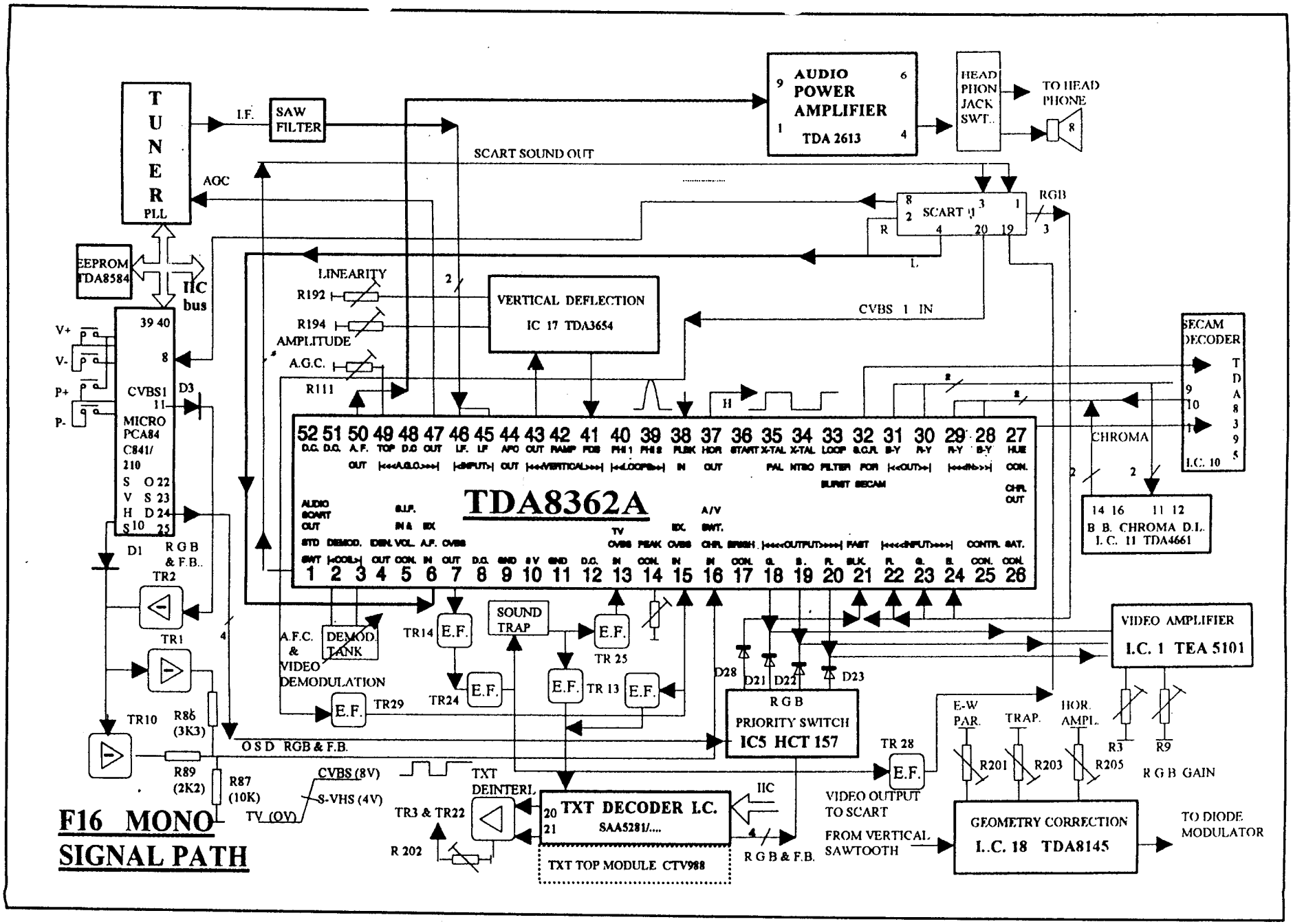
STEREO DECODER NICAM L-L'

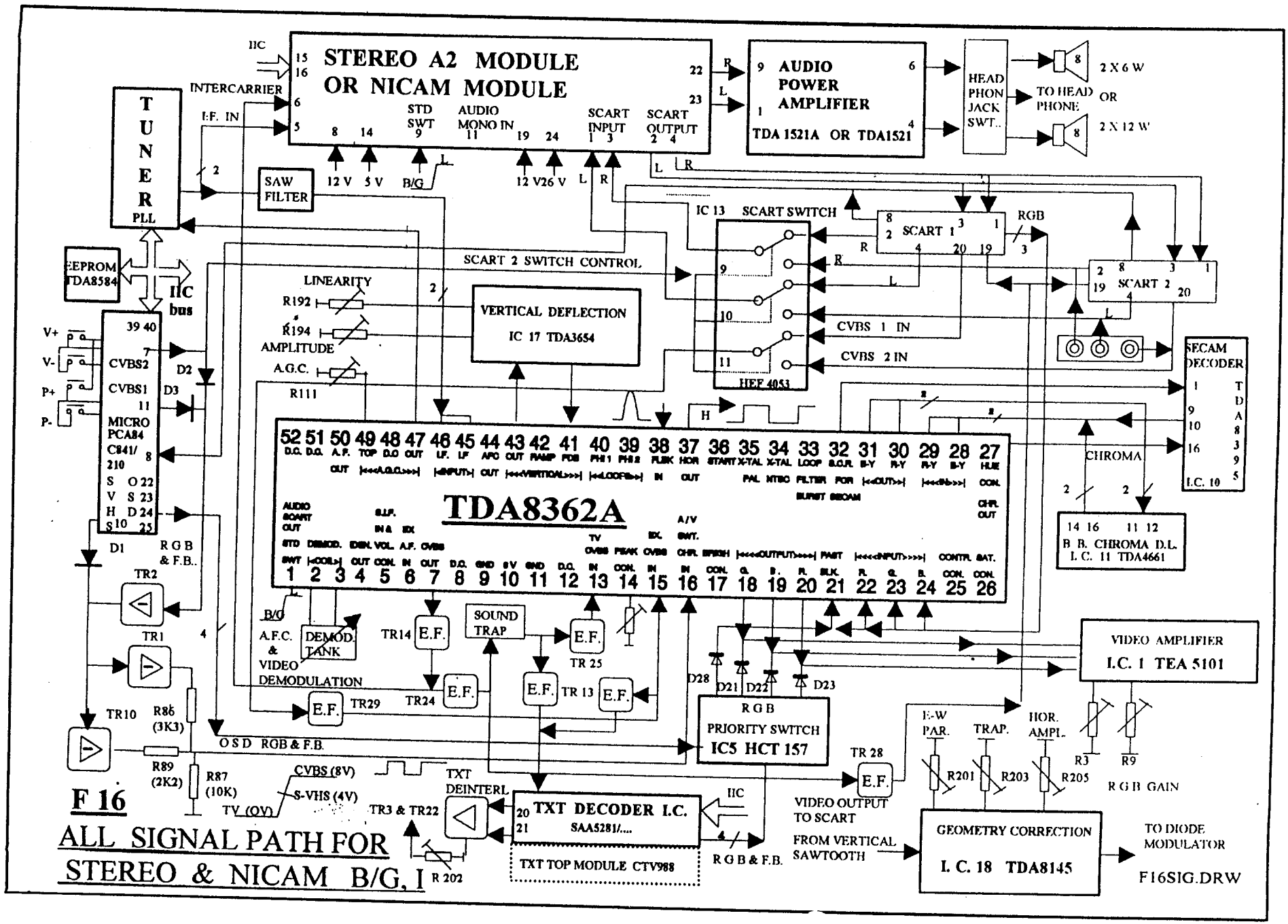




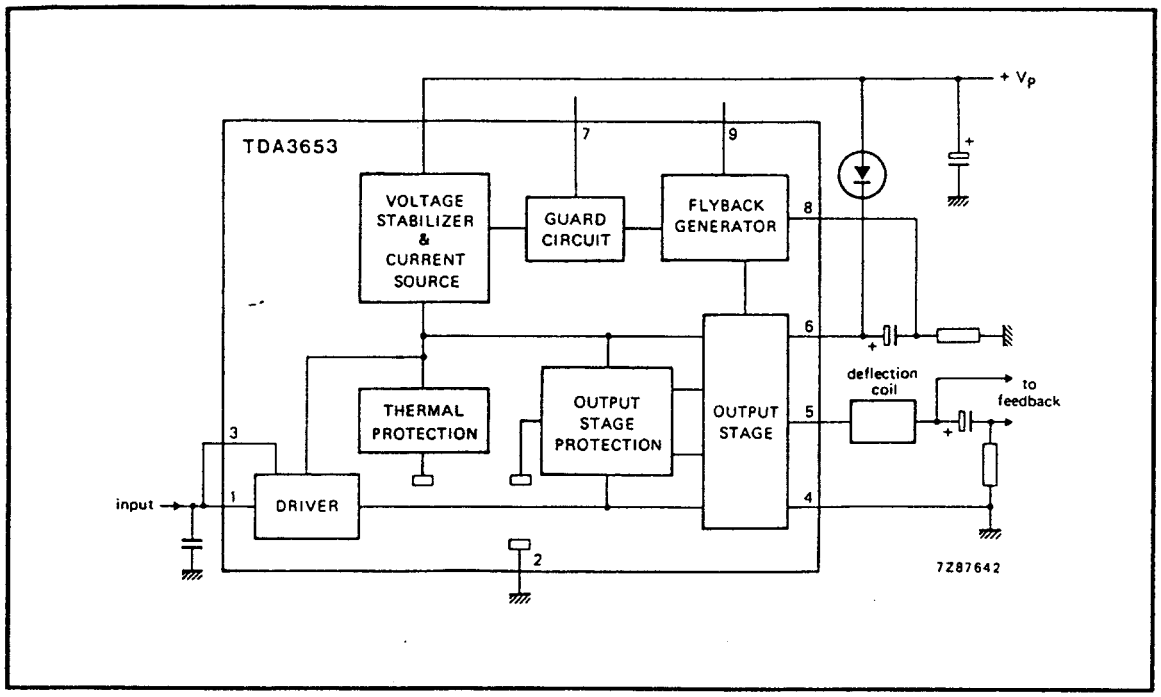

VIF Inp./
MAC switch
C AGC
C MAC
C BL
T.O.P.
Tuner AGC
Loop filter
2nd fpo
AFC
30
28
3
6
19
7
24
25
23
VIF B
5
4
VIF A
2
1
TUNER AND VIF-AGC
VCO TWD
AFC DETECTOR
VIF AMPLIFIER AND INPUT SWITCH
FPLL
VIDEO EMODULATOR AND AMPLIFIER.
21
Video 1 V pp
10
CVBS 2 V pp
22
VIDEO BUFFER
14
SIF
32
31
SIF AMPLIFIER
SINGLE REFERENCE QSS MIXER AND AM-DEMOD.
FM DETECTOR (PLL)
12
AF 1
INTERNAL VOLTAGE STABILIZER
SIF-AGC
FM DETECTOR (PLL)
13
AF 2
29
27
26
9
8
11
20
17
18
16
15
Vp/2
+5V
C AGC
Stand. switch
L'/L switch, FM inp. switch
5.5
6/6.5
5.74
TDA 9815


DQPSK
MIXREF
SAA7283
VDDF1
VSSF1
COFF
CEYE
QUADRATURE MIXERS, BASEBAND FILTERS & AGC GAIN STAGE
SOFF
SEYE
COSINE
SINE
VDDF2
VSSF2
REMO
REMVE
IREF
VROF
VRCF
CARRIER LOOP PHASE DETECTOR & DATA SLICERS
AGC CONTROLLER
PKDET
CLKPF
DATAOUT
BIT RATE CLOCK RECOVERY
CARRIER LOOP QUADRATURE VCO
VCONT
VCLK
DATAIN
XTAL
OSC
VSSX
SDA
SCL
ADSEL
XTAL OSC
I²C
NICAM 728 DECODER & DEVICE CONTROLLER
PCLK
RESET
PORT2
MUTE
PORM
PORA
DOBM
DAI
DIGITAL FILTER, GAIN, J17 DE-EMPHASIS
VDDD
VSSD
NOISE SHAPER (LEFT CHANNEL)
NOISE SHAPER (RIGHT CHANNEL)
VSSDAC
CDL
BITSTREAM DAC (LEFT CHANNEL)
BITSTREAM DAC (RIGHT CHANNEL)
CDR
FML
EXTL
VDDA
VSSA
VROA
VRCA
FMR
EXTR
OUTPUT SWITCHES & BUFFER (LEFT CHANNEL)
OUTPUT SWITCHES & BUFFER (RIGHT CHANNEL)
MGA898
OPL
INTL
INTR
OPR

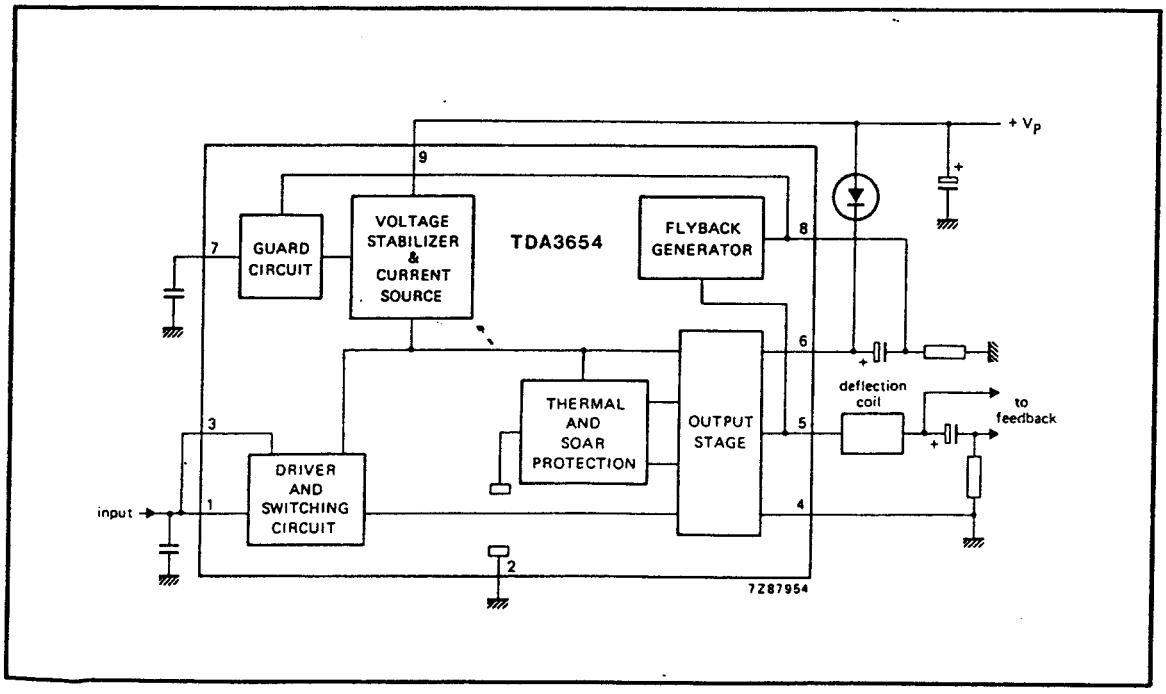

TUNER
PLL
I.F.
SAW FILTER
AUDIO POWER AMPLIFIER
TDA 2613
HEAD PHON JACK SWT.
TO HEAD PHONE
SCART SOUND OUT
AGC
SCART 1
RGB
EEPROM TDA8584
IIC bus
LINEARITY
R192
R194
AMPLITUDE
A.G.C.
R111
VERTICAL DEFLECTION
IC 17 TDA3654
CVBS 1 IN
SECAM DECODER TDA8395
I.C. 10
CHROMA
B B. CHROMA D.L.
I. C. 11 TDA4661
V+
V-
P+
P-
MICRO PCA84 C841/ 210
CVBS1
D3
D1
R G B & F.B.
TDA8362A
TR2
TR1
TR10
R86 (3K3)
R89 (2K2)
R87 (10K)
OSD RGB & F.B.
CVBS (8V)
S-VHS (4V)
TV (0V)
A.F.C. & VIDEO DEMODULATION
DEMOD. TANK
TR29
TR14
E.F.
SOUND TRAP
TR 25
TR24
TR13
D28
D21
D22
D23
R G B PRIORITY SWITCH IC5 HCT 157
VIDEO AMPLIFIER I.C. 1 TEA 5101
E-W PAR.
TRAP.
HOR. AMPL.
R201
R203
R205
R3
R9
R G B GAIN
TR 28
VIDEO OUTPUT TO SCART
TXT DEINTERL
TR3 & TR22
R 202
TXT DECODER I.C.
SAA5281/....
TXT TOP MODULE CTV988
IIC
R G B & F.B.
FROM VERTICAL SAWTOOTH
GEOMETRY CORRECTION I.C. 18 TDA8145
TO DIODE MODULATOR
F16 MONO SIGNAL PATH

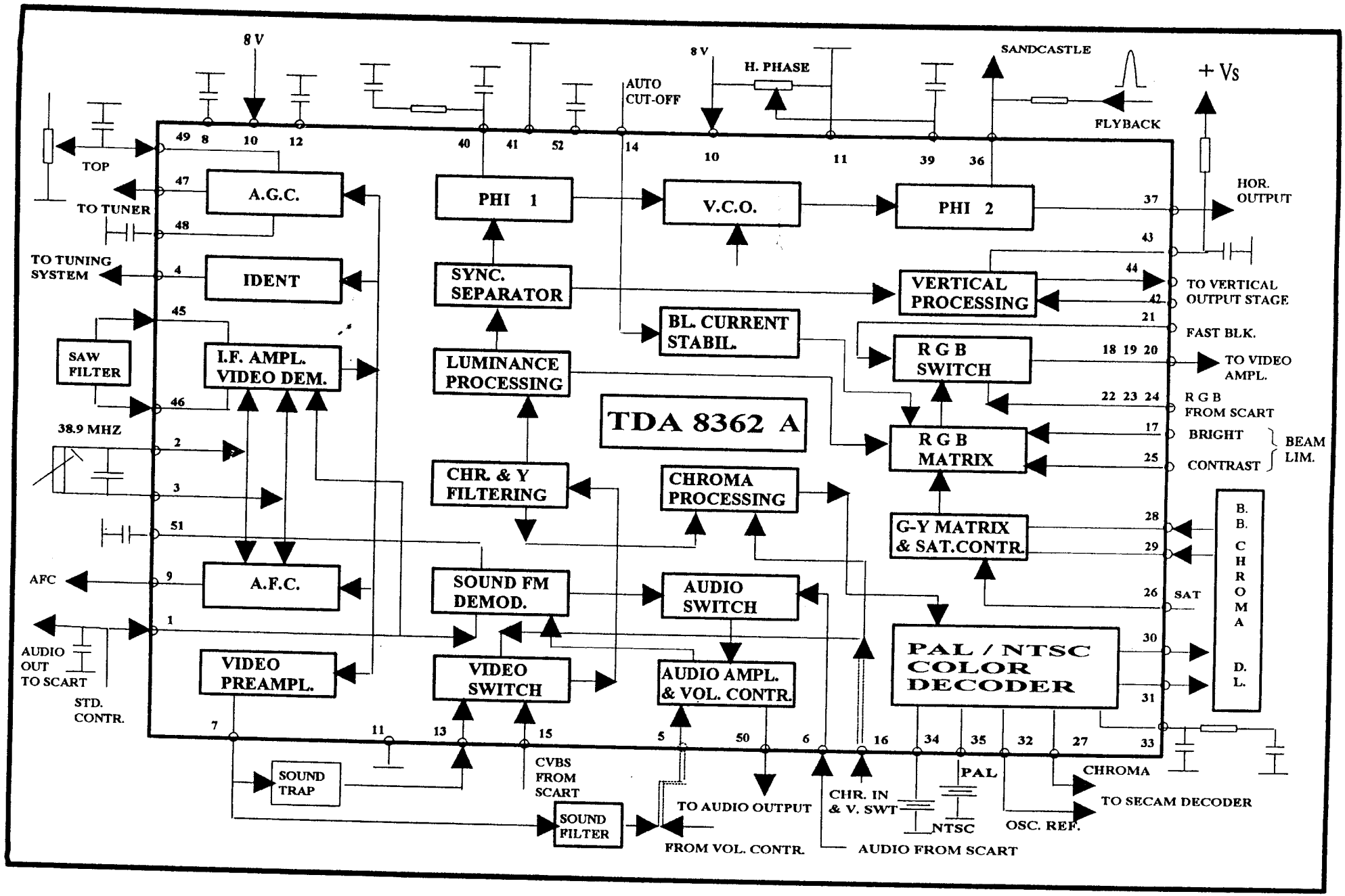

STEREO A2 MODULE
OR NICAM MODULE
AUDIO
POWER
AMPLIFIER
TDA 1521A OR TDA1521
HEAD
PHON
JACK
SWT..
2 X 6 W
TO HEAD
PHONE
OR
2 X 12 W
TUNER
PLL
SAW
FILTER
INTERCARRIER
I.F. IN
IIC
STD
SWT
AUDIO
MONO IN
SCART
INPUT
SCART
OUTPUT
12 V
5 V
B/G
12 V
26 V
IC 13 SCART SWITCH
HEF 4053
SCART 1
SCART 2
RGB
SCART 2 SWITCH CONTROL
CVBS 1 IN
CVBS 2 IN
EEPROM
TDA8584
IIC
bus
LINEARITY
R192
R194
AMPLITUDE
A.G.C.
R111
VERTICAL DEFLECTION
IC 17 TDA3654
SECAM
DECODER
I.C. 10
CHROMA
B B. CHROMA D.L.
I. C. 11 TDA4661
TDA8362A
CVBS2
CVBS1
MICRO
PCA84
C841/
210
V+
V-
P+
P-
D1
D2
D3
RGB
& F.B.
TR1
TR2
TR10
R86
(3K3)
R89
(2K2)
R87
(10K)
CVBS (8V)
S-VHS (4V)
TV (0V)
OSD RGB & F.B.
B/G
A.F.C.
&
VIDEO
DEMODULATION
DEMOD.
TANK
TR14
E.F.
SOUND
TRAP
TR 25
TR29
TR24
TR 13
D28
D21
D22
D23
RGB
PRIORITY SWITCH
IC5 HCT 157
VIDEO AMPLIFIER
I.C. 1 TEA 5101
E-W
PAR.
TRAP.
HOR.
AMPL.
R201
R203
R205
R3
R9
R G B GAIN
TR 28
VIDEO OUTPUT
TO SCART
FROM VERTICAL
SAWTOOTH
GEOMETRY CORRECTION
I. C. 18 TDA8145
TO DIODE
MODULATOR
TXT
DEINTERL
TR3 & TR22
R 202
TXT DECODER I.C.
SAA5281/....
TXT TOP MODULE CTV988
R G B & F.B.
F 16
ALL SIGNAL PATH FOR
STEREO & NICAM B/G, I
F16SIG.DRW

VERTICAL DEFLECTION - TDA 3653 (90°)



VERTICAL DEFLECTION - TDA 3654 (110°)




8 V
8 V
H. PHASE
AUTO CUT-OFF
SANDCASTLE
FLYBACK
+ Vs
TOP
TO TUNER
TO TUNING SYSTEM
SAW FILTER
38.9 MHZ
AFC
AUDIO OUT TO SCART
STD. CONTR.
A.G.C.
IDENT
I.F. AMPL. VIDEO DEM.
A.F.C.
VIDEO PREAMPL.
SOUND TRAP
PHI 1
V.C.O.
PHI 2
SYNC. SEPARATOR
LUMINANCE PROCESSING
CHR. & Y FILTERING
SOUND FM DEMOD.
VIDEO SWITCH
SOUND FILTER
BL. CURRENT STABIL.
TDA 8362 A
CHROMA PROCESSING
AUDIO SWITCH
AUDIO AMPL. & VOL. CONTR.
HOR. OUTPUT
VERTICAL PROCESSING
TO VERTICAL OUTPUT STAGE
FAST BLK.
R G B SWITCH
TO VIDEO AMPL.
R G B FROM SCART
R G B MATRIX
BRIGHT
CONTRAST
BEAM LIM.
G-Y MATRIX & SAT.CONTR.
SAT
B. B. CHROMA D. L.
PAL / NTSC COLOR DECODER
CVBS FROM SCART
TO AUDIO OUTPUT
FROM VOL. CONTR.
CHR. IN & V. SWT
AUDIO FROM SCART
PAL
NTSC
OSC. REF.
CHROMA
TO SECAM DECODER
49 8 10 12 40 41 52 14 10 11 39 36
47 48 4 45 46 2 3 51 9 1 7 11 13 15 5 50 6 16 34 35 32 27 33
37 43 44 42 21 18 19 20 22 23 24 17 25 28 29 26 30 31

MONOCHIP - PIN DESCRIPTION FOR TDA 8362A

1 Audio deemphasis and +/- mod. switch
2 IF-demodulator tuned circuit
3 IF-demodulator tuned circuit
4 Video identification output
5 Sound IF in plus volume control
6 External audio input
7 IF video output
8 Decoupling digital supply
9 AFC output
10 Positive supply (8 V)
11 Ground
12 Decoupling filter tuning
13 Internal CVBS input
14 Black-current input
15 External CVBS input
16 Chroma + AV switch input
17 Brightness control input
18 B-output
19 G-output
20 R-output
21 RGB-insertion and blanking input
22 R-input for insertion
23 G-input for insertion
24 B-input for insertion
25 Contrast control input
26 Saturation control input
27 Hue control input (or croma out)
28 B-Y input signal
29 R-Y input signal
30 R-Y output signal
31 B-Y output signal
32 4.43 Mhz output for TDA8395
33 Loop filter burst phase detector
34 3.58 Mhz X-tal connection
35 4.43 Mhz X-tal connection
36 Start horizontal oscillator
37 Horizontal output
38 Flyback input / sandcastle output
39 Phi - 2 loop filter
40 Phi - 1 loop filter
41 Ground
42 Vertical feedback input
43 Vertical ramp generator
44 Vertical output
45 IF-input
46 IF-input
47 Tuner AGC control
48 AGC decoupling capacitor
49 Tuner take-over adjustment
50 Audio output
51 Decoupling sound demodulator
52 Decoupling bandgap supply

The TDA 8361A has the following differences :

Pin 1 Only audio deemphasis
Pin 27 Only hue control
Pin 32 4.43 Mhz output for the TDA8395 not connected

Functional description of monochip TDA 8361/2A.

-IF Amplifier

The amplifier contains three differential stages with typical 60 dB dynamic control. The demodulator's polarity is suited for both positive and negative modulation in the TDA 8362A version (multi-standard PAL, SECAM, L L'), **and for only negative modulation in TDA 8361A.**
The AFC circuit is driven by the same reference signal as the video demodulator: The AFC output voltage varies in the range 0--6V. The circuit for identifying the presence of the signal in the transmission channel works independently of the synchronisation circuit: 0V, no identification and mute sound; 8V identification and 4.43 MHz chroma frequency; 6V, identification and chroma frequency 3.58 MHz.
The AGC system controls the IF amplifier gain is such a way that the amplitude of the output video signal remains constant. The voltage of the AGC capacitors (pin 48) takes into account the IF amplification level. A second loop acts on the tuner to amplify the IF input. The amplification level is regulated by potentiometer R111.

-Sound circuit

The inter-carrier signal is amplified/limited and demodulated by a PLL (phase locked loop). The PLL circuit automatically locks into the incoming signal. The volume controls the amplitude of the composite audio signal (pin.5).(700mV max).

-Horizontal and vertical synchronisation circuit

Upstream of the sync. separator there is an amplifier that raises the synchronism pulse to a fixed level. The separated synchronism pulses are forwarded to the phase and coincidence detectors. The coincidence detector is used to synchronise the line oscillator and to identify the transmission channel. The integrated circuit contains a start-up circuit for the horizontal output (pin 36). The driving pulses for the vertical are generated by a divider circuit. The components for the generation of the vertical ramp are connected to pin 43. The feedback voltage from the vertical amplification stage is connected to pin 42.

-Video filters

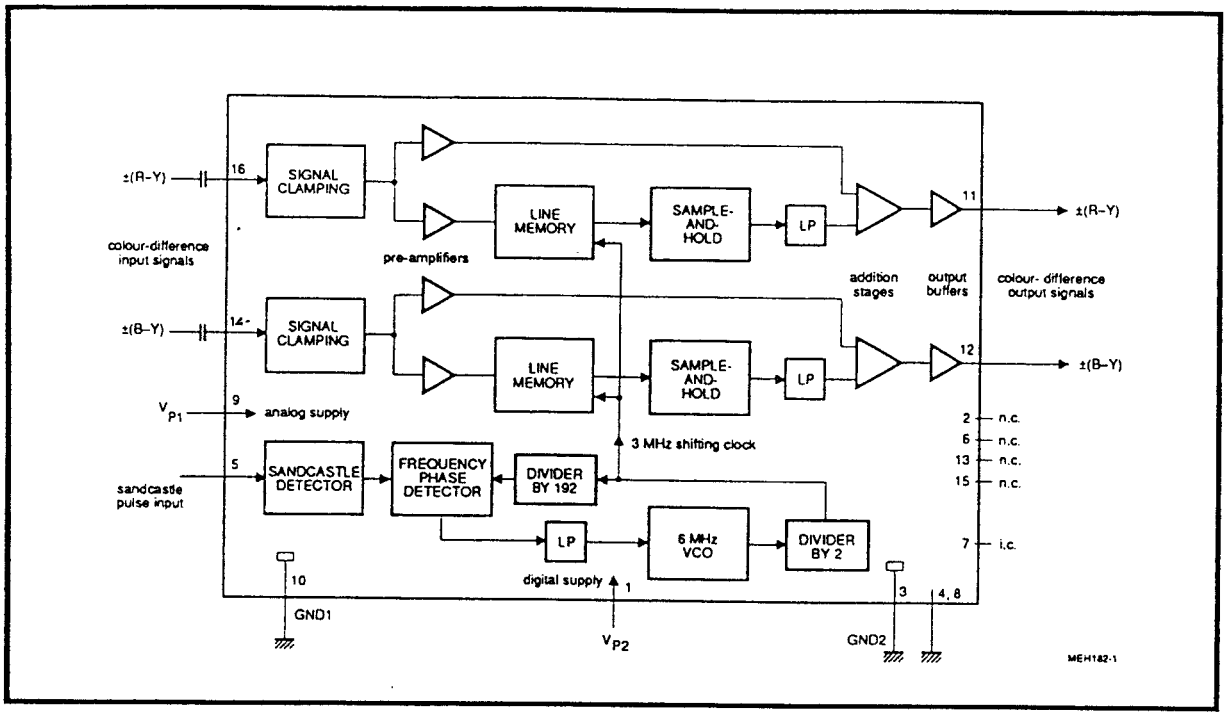
The integrated circuit contains a chroma trap and band-pass circuit. The filters are implemented by means of circuit with gyrators. The chroma trap is active when the chroma input pin (pin 16) is connected to ground or directly to the power supply. If pin 16 is held at intermediate voltage, the trap does not operate and therefore S-VHS application is possible. The luminance delay line is implemented by means of circuit with gyrators.

-Colour decoder

The colour decoder contains a quartz-controlled oscillator, a killer circuit, and a colour different demodulator. The 90° phase deviation is effected internally. The decoder adapts automatically to the PAL and NTSC system. For this purpose there are two pins 35 and 34. Whit TDA 8362A, a PAL/SECAM/NTSC automatic multi-standard decoder may be built through the addition of the SECAM TDA 8395 decoder.

-RGB output circuit

The colour different signals enter the matrices with the luminance signal to obtain the RGB signals. The integrated circuit handles the internal signals and those coming from outside (SCART connector). Brightness and contrast act both on the internal signals and the external ones. Pin 21 of the fast blanking has a second,4V, threshold level. When this level is exceeded the RGB outputs are blocked and the OSD signals are sent directly to the output amplifier. The RGB signals have an amplitude of about 4V under nominal operating conditions.



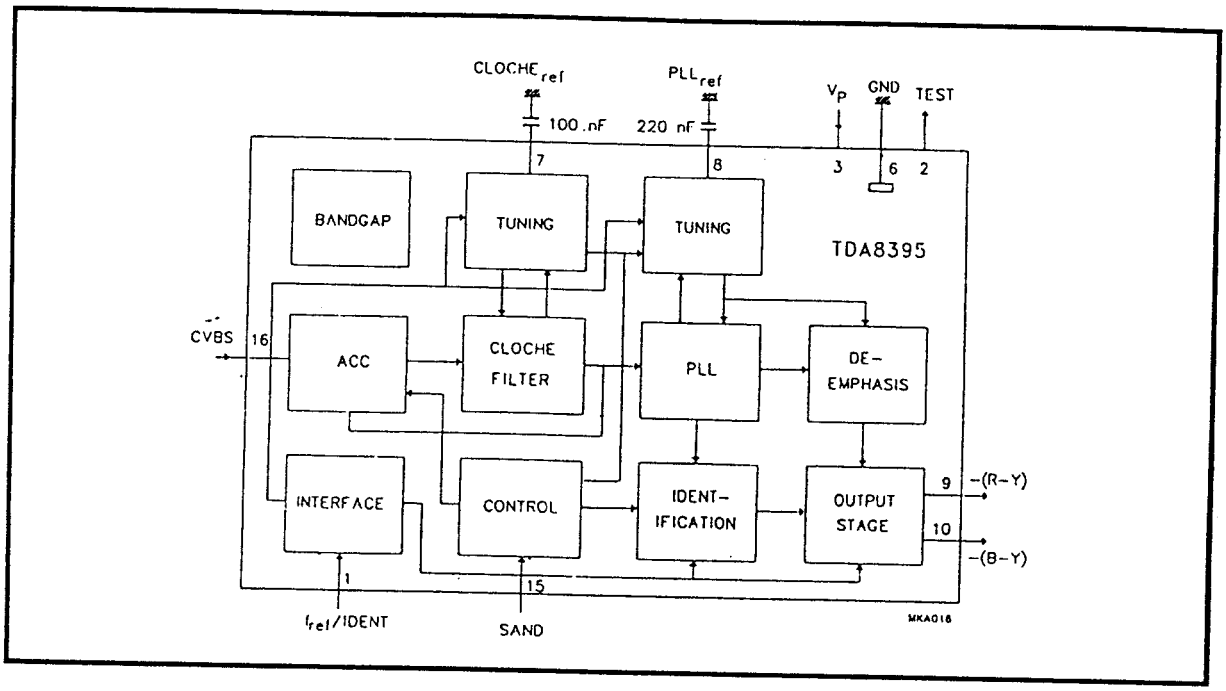
Pinout description

1. digital section +5V power supply
2. not connected
3. digital section ground
4. internally connected
5. sandcastle input
6. not connected
7. internally connected
8. internally connected
9. analog section +5V power supply
10. analog section ground
11. (R-Y) signal output
12. (B-Y) signal output
13. not connected
14. (B-Y) signal input
15. not connected
16. (R-Y) signal input

Functional description

The integrated circuit TDA 4665 is a delay line in integrated baseband. It is interfaces with decoders with colour difference output signals (R-Y) and (B-Y).

SECAM DECODER - TDA 8395



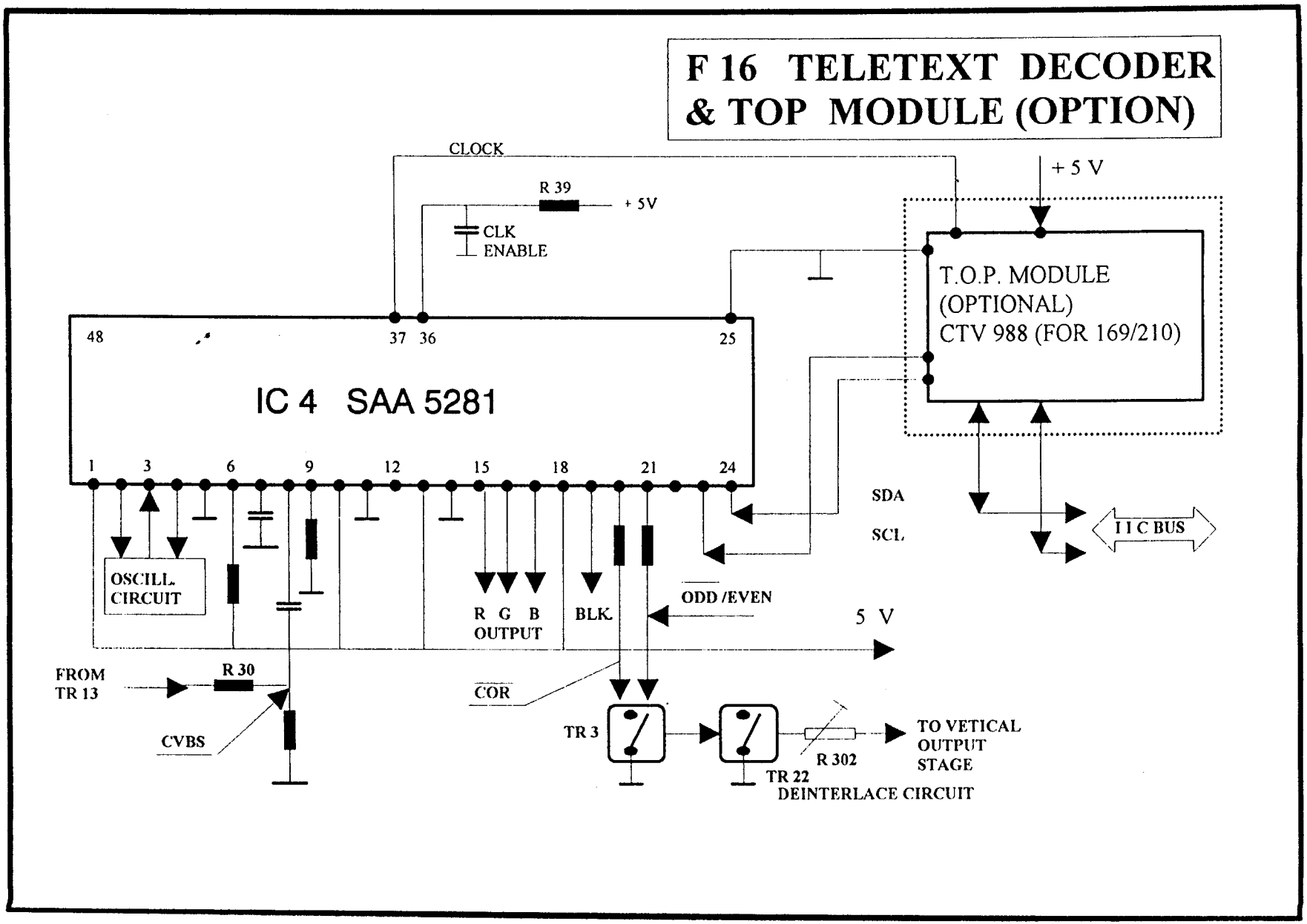
Pinout description

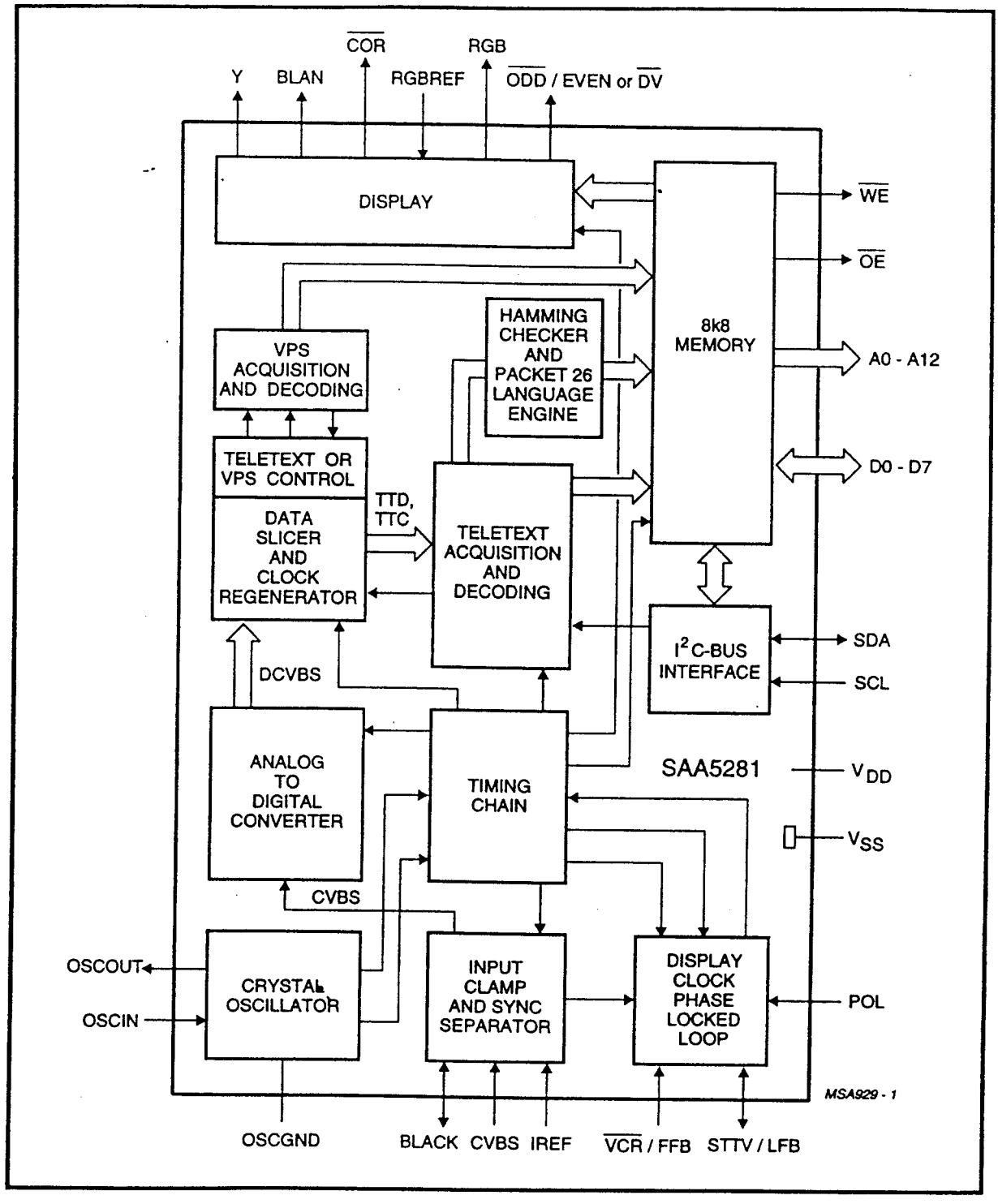
1. identification input
2. test
3. power supply
4. n.c.
5. n.c.
6. ground
7. cloche filter reference
8. PLL reference
9. -(R-Y) output
10. -(B-Y) output
11. n.c.
12. n.c.
13. n.c.
14. n.c.
15. sandcastle input
16. video input

Functional description

TDA 8395 is a completely integrated SECAM decoder. The integrated circuit incorporates HF and LF filters, a demodulator, and an identification circuit. No regulation is necessary. Requirements include a stable reference frequency for calibration and a sandcastle two-level pulse for the blanking and burst gating functions.

F 16 TELETEXT DECODER & TOP MODULE (OPTION)



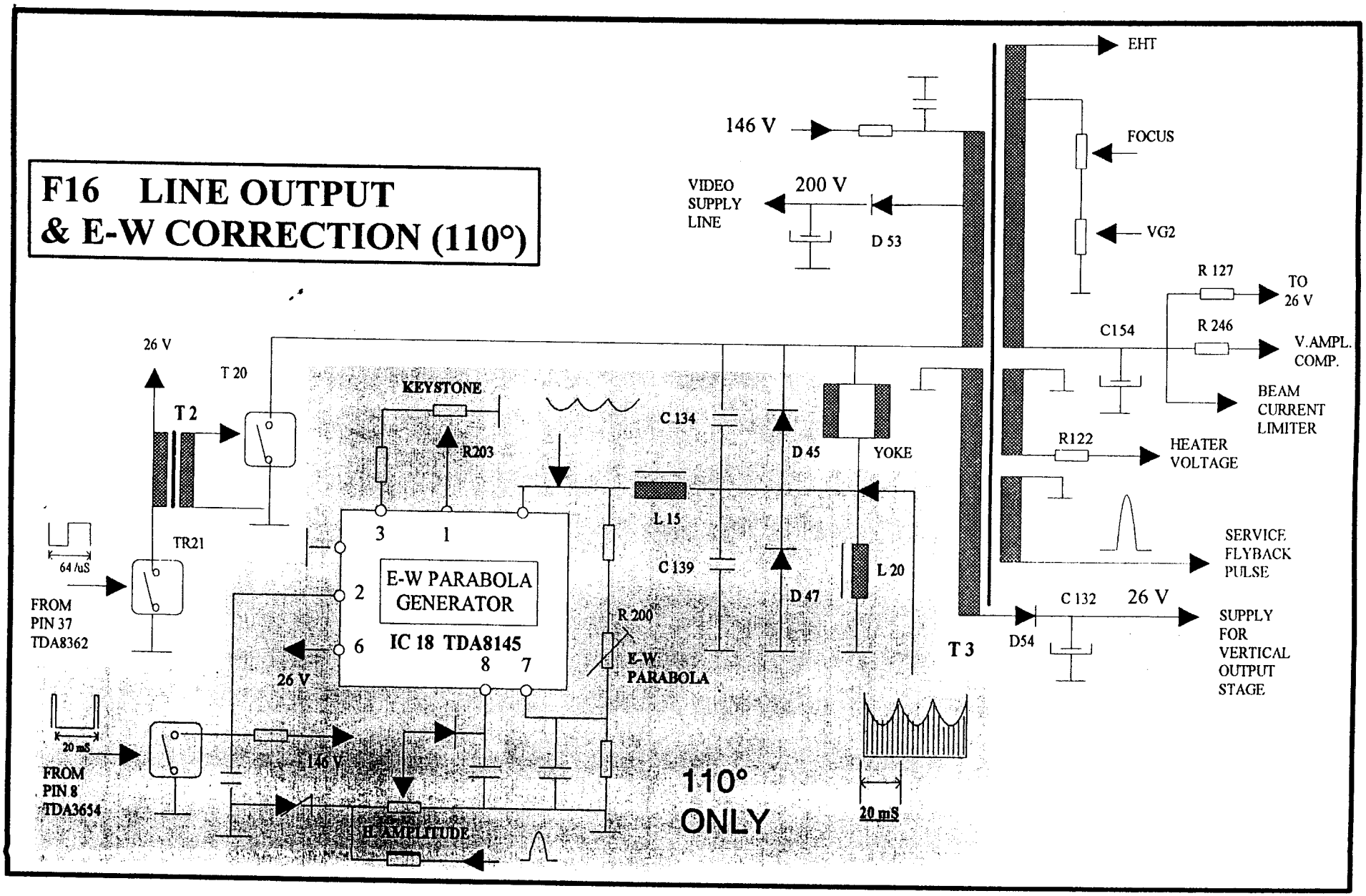

COR
RGB
Y
BLAN
RGBREF
ODD / EVEN or DV
DISPLAY
WE
OE
8k8 MEMORY
A0 - A12
D0 - D7
HAMMING CHECKER AND PACKET 26 LANGUAGE ENGINE
VPS ACQUISITION AND DECODING
TELETEXT OR VPS CONTROL
DATA SLICER AND CLOCK REGENERATOR
TTD, TTC
TELETEXT ACQUISITION AND DECODING
I²C-BUS INTERFACE
SDA
SCL
DCVBS
ANALOG TO DIGITAL CONVERTER
TIMING CHAIN
SAA5281
VDD
VSS
CVBS
OSCOUT
OSCIN
CRYSTAL OSCILLATOR
INPUT CLAMP AND SYNC SEPARATOR
DISPLAY CLOCK PHASE LOCKED LOOP
POL
MSA929 - 1
OSCGND
BLACK CVBS IREF
VCR / FFB
STTV / LFB

TELETEXT SAA 5281 pinout description

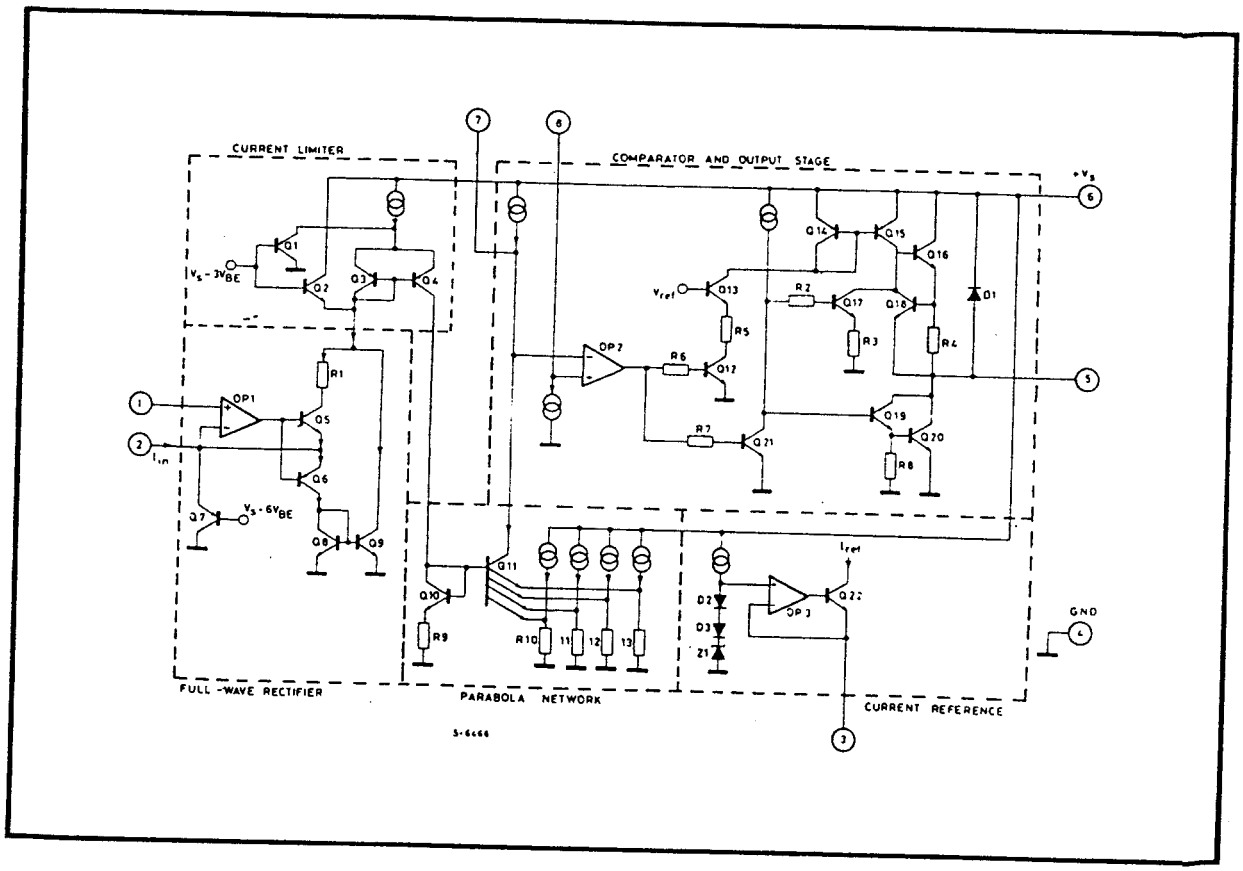
1. Power supply
2. 27 Mhz oscillator output
3. 27 Mhz oscillator input
4. Oscillator ground
5. Analogic ground
6. ADC reference voltage
7. Black level reference input
8. Composite video input
9. Current reference input
10. Power supply analogic
11. Polarity selection
12. Sync input/output
13. PLL time-constant input
14. Ground
15. Red output
16. Green output
17. Blue output
18. DC voltage level on RGB
19. Fast blanking output
20. Contrast-reduction programmable output
21. De-interlace output
22. Y out
23. IIC bus
24. IIC bus
25. Ground
26. i.c.
27. i.c.
28. i.c.
29. i.c.
30. i.c.
31. i.c.
32. i.c.
33. i.c.
34. i.c.
35. i.c.
36. Clk en
37. Clk o/p
38. i.c.
39. i.c.
40. i.c.
41. i.c.
42. i.c.
43. i.c.
44. Line 23
45. i.c.
46. i.c.
47. i.c.
48. i.c.

Functional description

The integrate circuit SAA 5281 is a teletext decoder with 4 page memory


F16 LINE OUTPUT
& E-W CORRECTION (110°)
146 V
VIDEO
SUPPLY
LINE
200 V
D 53
EHT
FOCUS
VG2
R 127
TO
26 V
C154
R 246
V.AMPL.
COMP.
BEAM
CURRENT
LIMITER
R122
HEATER
VOLTAGE
SERVICE
FLYBACK
PULSE
C 132
26 V
SUPPLY
FOR
VERTICAL
OUTPUT
STAGE
D54
T 3
26 V
T 20
T 2
KEYSTONE
R203
C 134
D 45
YOKE
L 15
C 139
D 47
L 20
R 200
E-W
PARABOLA
TR21
64 /uS
FROM
PIN 37
TDA8362
3
1
2
6
E-W PARABOLA
GENERATOR
IC 18 TDA8145
8
7
26 V
20 mS
FROM
PIN 8
TDA3654
146 V
H AMPLITUDE
110°
ONLY
20 mS

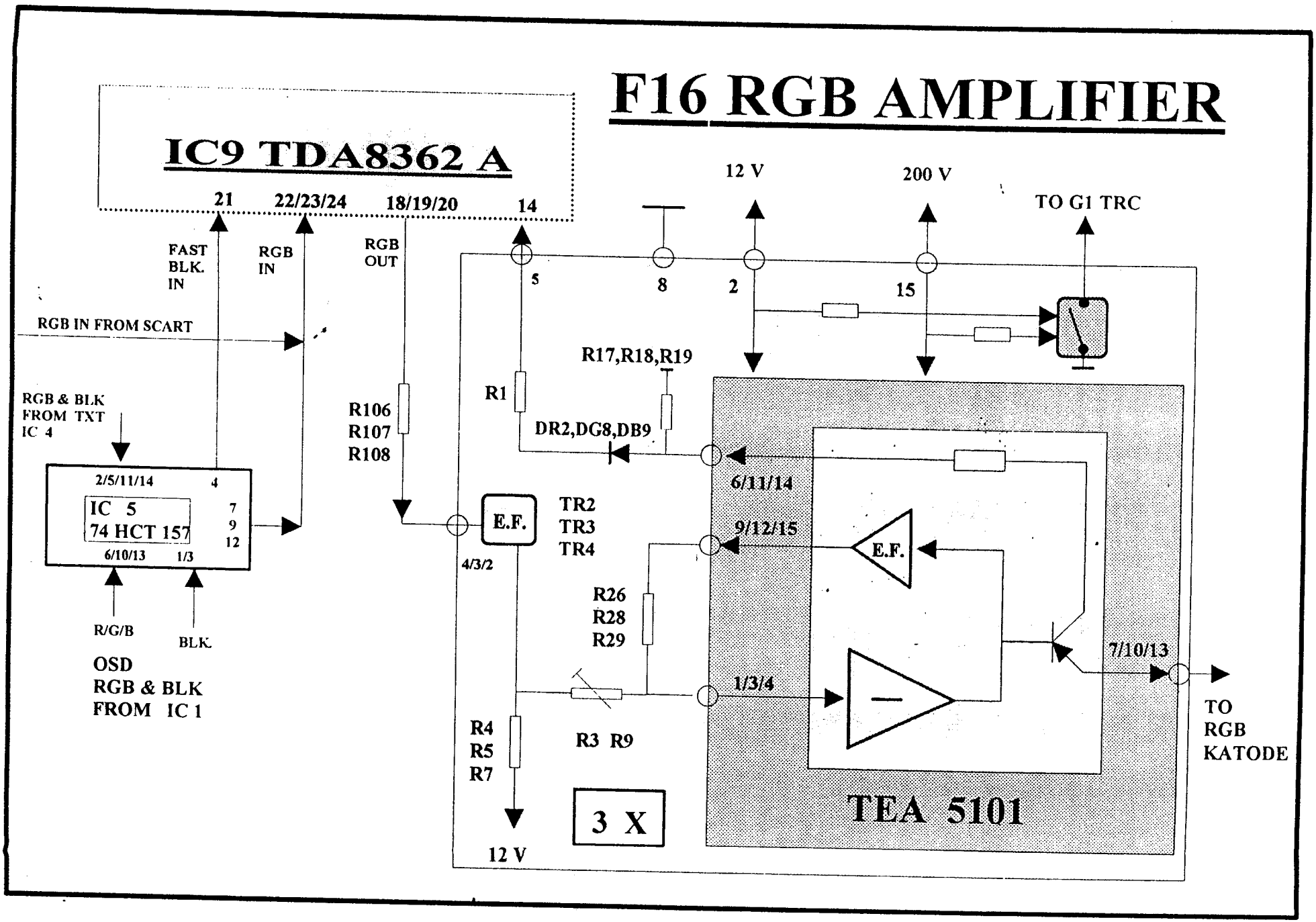
EAST-WEST PARABOLA GENERATOR - TDA 4950

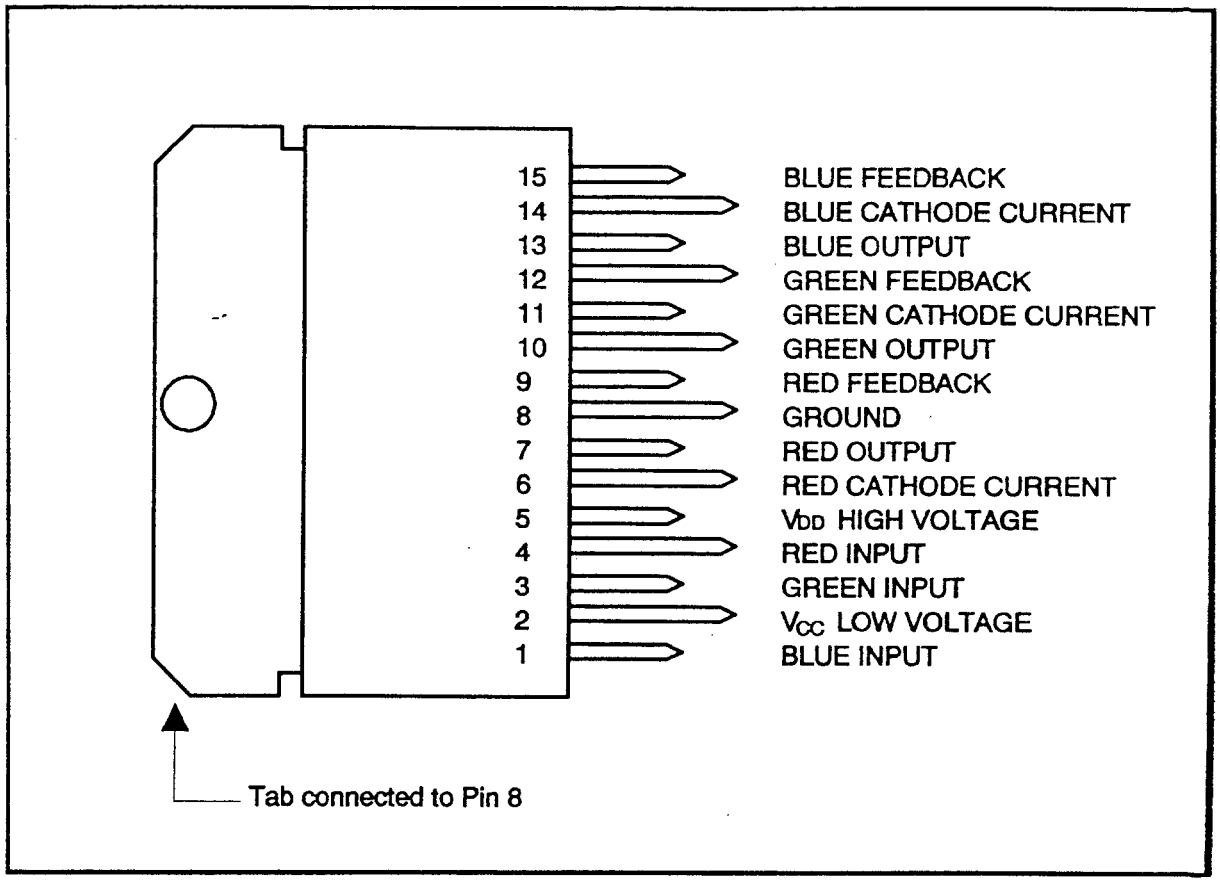


Pinout description

1. keystone correction input
2. frame sawtooth current input
3. current reference
4. ground
5. output
6. power supply
7. parabola output/inverting input
8. non-inverting input

F16 RGB AMPLIFIER





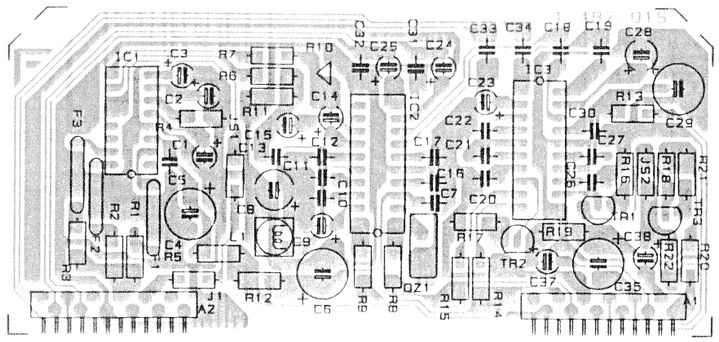
Pinout description

1. Blue input
2. low voltage input
3. Green input
4. Red input
5. high voltage input
6. Red cathode current
7. Red output
8. ground
9. Red feedback
10. Green output
11. Green cathode current
12. Green feedback
13. Blue output
14. Blue cathode current
15. Blue feedback

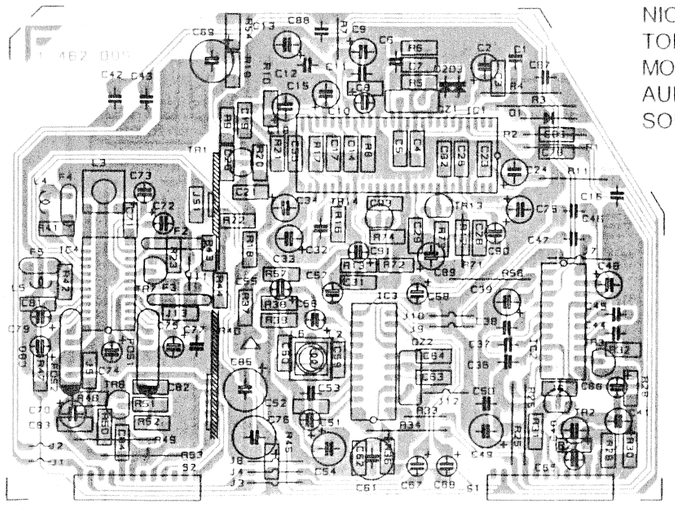
NOTES

CHASSIS F16

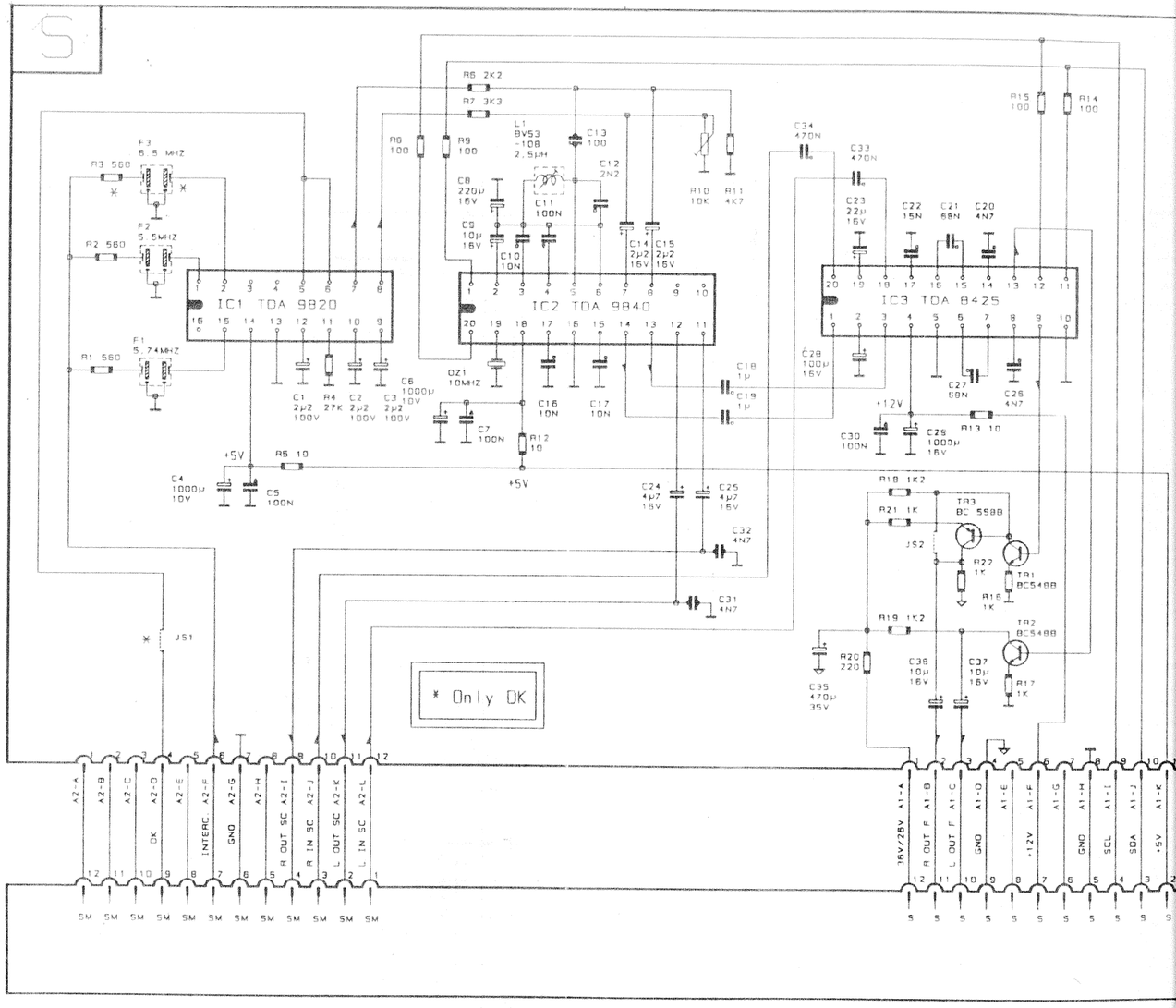
F.S. PCF84C841/169
F.S. PCF84C841/210



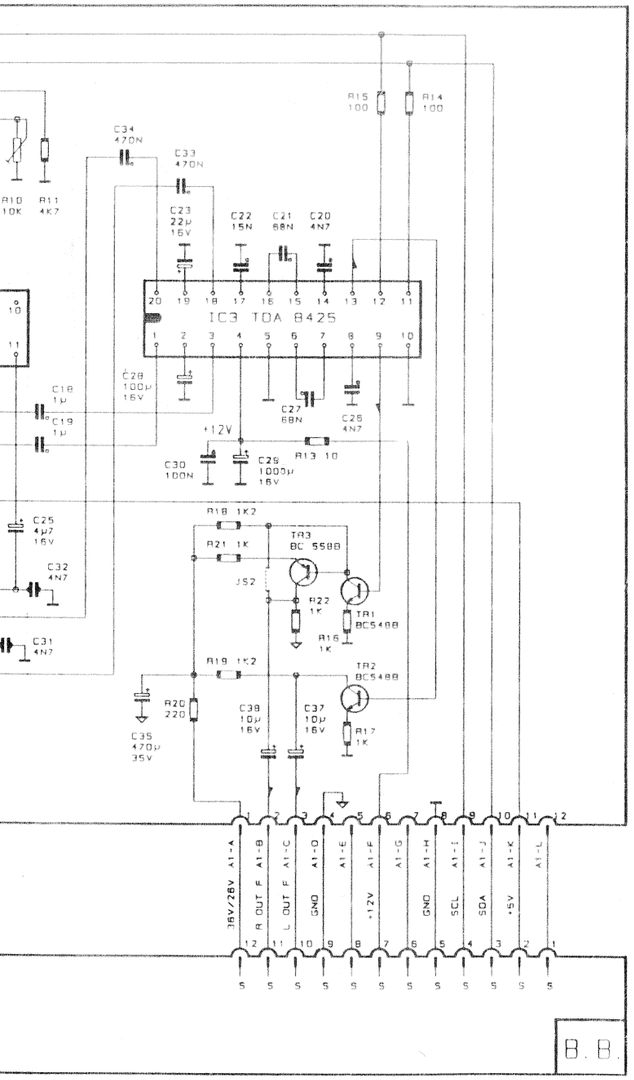
STEREO DECODER
TON STEREO
MODULE SON STEREO
AUDIO STEREO
SONIDO STEREO

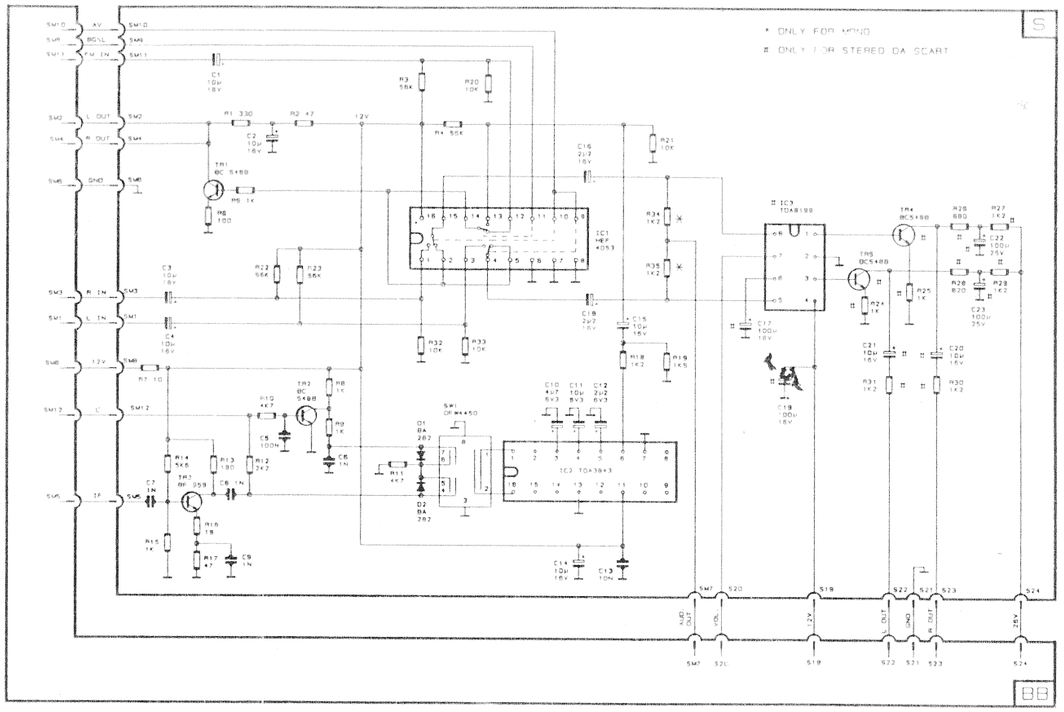


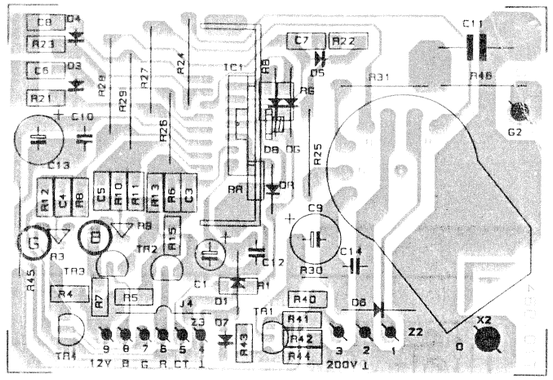
NICAM 3 DECODER
TON STEREO NICAM 3
MODULE SON STEREO NICAM 3
AUDIO STEREO NICAM 3
SONIDO STEREO NICAM 3



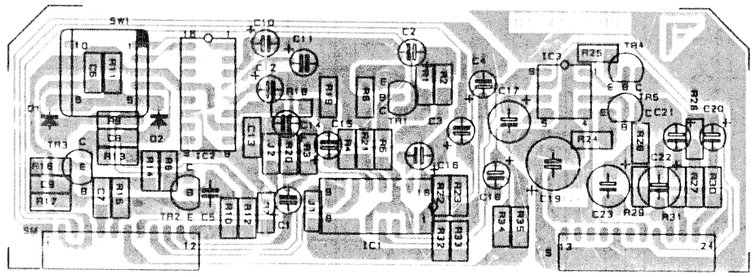
PLAN DRAWING COPPER
BESTUECKUNGSPLAN KUP
PLANS COTE CUIVRE
MAPPA LATO RAME
ZONA DE PISTAS (COBRE



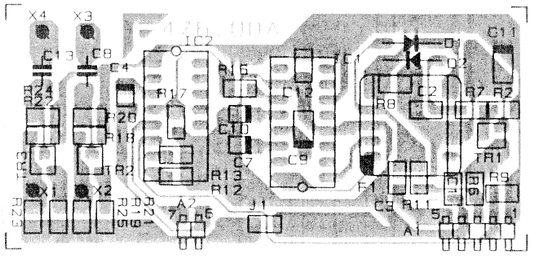




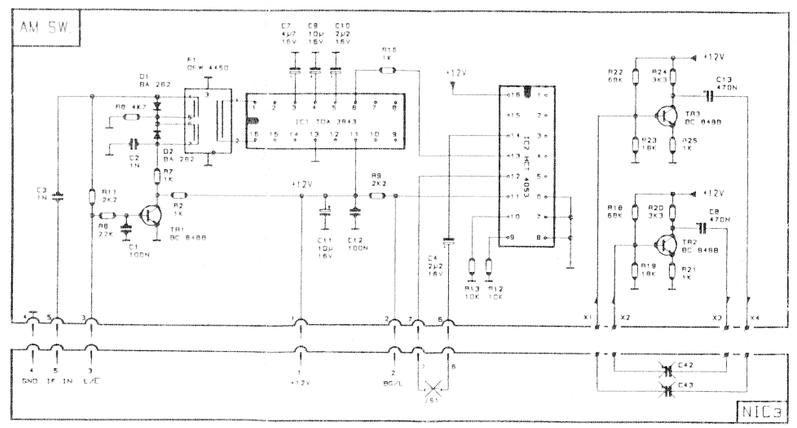
TUBE SOCKET
BILDROEHRENSOCKEL
SUPPORT TRC
ZOCCOLO CINESCOPIO
CIRCUITO IMPRESO ZOCALO



AUDIO/L+STEREO FROM SCART CONNECTOR
AUDIO/L+STEREO ÜBER SCART
SON/L+STEREO PAR LA PRISE PERITELEVISION
AUDIO/L+STEREO DA SCART
AUDIO/L+ESTEREO POR MEDIO DEL EUROCONECTOR SCART

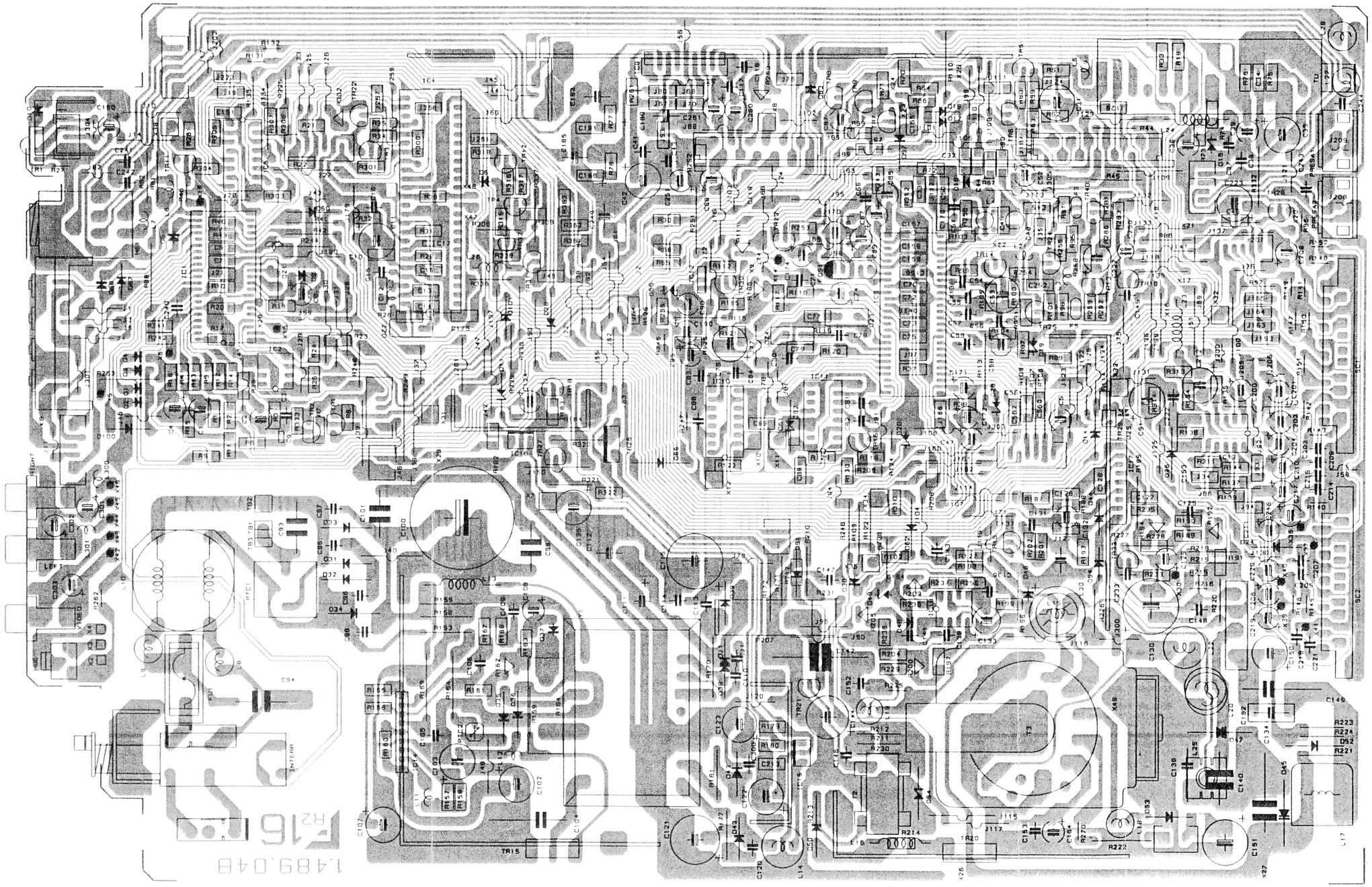


PLAN DRAWING COPPER SIDE
BESTUECKUNGSPLAN KUPFERSEITE
PLANS COTE CUIVRE
MAPPA LATO RAME
ZONA DE PISTAS (COBRE)



NICAM L AUDIO MODULE
MODUL FÜR NICAM L
MODULE SON POUR NICAM L
MODULO AUDIO PER NICAM L
MODULO AUDIO POR NICAM L

BOARD BASE
GRUNDCHASSIS
PLATINE MERE
TELAIO BASE
CIRCUITO IMPRESO CHASIS



NICIII

IC1 SAA 7283

PORT2 AOSEL SDA SCL DATADUT RESET VDDD PCLK VSSD DATAIN VSSX OSC XTAL CLKPF TEST VSSF2 VDDF2 VRCF IREF VROF PKDET CEYE COFF DQPSK MIXREF VCONT

MUTE DOBM VDDA VSSA VRCA EXTR FMR OPR NC NC VRDA VSSDAC NC NC OPL FML EXTL PORM PORA REMVE REMO SEYE SOFF VSSF1 VCLK VDDF1

IC2 TDA 8425

IC3 TDA 9840

IC4 TDA 3858-V18

* NOT FOR NICAM L/L'

SW L/L'

S16 SCL · S15 SDA · S20 · S23 R F · S22 L F · S21 GND · S24 26V · SM1 L IN · SM3 R IN · S18 · S17 GND · S13 · S19 12V · S14 5V · SM23 · SM2 L OUT · SM4 R OUT · SM6 GND · SM7 · SM10 · SM9 BGNL · SM12 L · SM5 IF · SM8 12V

BB

IC1 PCF84C841-169/210

STEREO
STEREO DA SCART
NICAM III

SM1..SM12 USED
FOR MONO BG/L TOO

IC4 SAAE281

IC5 HCT157

TUNER

PIP

TOP

220-240

For safety reasons replace the marked components with original ones only

1 H 1,5Vpp

2 H 2,5Vpp

3 H 1,7Vpp

4 H 4Vpp

5 H 4Vpp

6 H 4Vpp

7 H 0,5Vpp

8 H 0,7Vpp

9 H 0,25Vpp

10 2Vpp

11 V 1,2Vpp

ADJUSTMENT	90° 110°	ADJUST R186 TO CENTRE THE PICTURE HORIZONTALLY
EINSTELLANWEISUNG		MIT R186 HORIZONTALE BILDLAGE EINSTELLEN
REGLAGES		REGLER R186 POUR OBTENIR UN CENTRAGE CORRECTE HORIZONTAL
REGOLAZIONI	(HC)	REGOLARE R186 PER UNA CORRETTA CENTRATURA ORIZZONTALE
	90° 110°	ADJUST R194 FOR PROPER VERTICAL HEIGHT
		MIT R194 VERTIKAL-AMPLITUDE EINSTELLEN
		REGLER R194 POUR OBTENIR UNE CORRECTE AMPLITUDE VERTICALE
	(VA)	REGOLARE R194 PER UNA CORRETTA AMPIEZZA VERTICALE
	90° 110°	ADJUST R192 FOR PROPER VERTICAL LINEARITY
		MIT R192 VERTIKAL-LINEARITAT EINSTELLEN
		REGLER R192 POUR OBTENIR UNE CORRECTE LINEARITE VERTICALE
	(VL)	REGOLARE R192 PER UNA CORRETTA LINEARITA VERTICALE
	90° 110°	ADJUST L25/R205 FOR PROPER HORIZONTAL WIDTH
		MIT L25/R205 HORIZONTAL-AMPLITUDE EINSTELLEN
		REGLER L25/R205 POUR OBTENIR UNE CORRECTE AMPLITUDE HORIZONTALE
	(HA)	REGOLARE L25/R205 PER UNA CORRETA AMPIEZZA ORIZZONTALE

IC9 TDA 8361A - TDA 8362A

SM1..SM12 USED FOR MONO BG/L TOO

IC8
TDA1521A FOR 6W+6W
TDA1521 FOR 12W+12W
TDA2613 FOR MONO

TUNER

ONLY STEREO IC

IC10 TDA 8395

IC11 TDA 4661

IC12 LM7808

IC13 HEF4053

IC15 LM317

IC16 LM7805

IC17 TDA3654

IC18 TDA8145 TDA4950

SC1

PIP

VIDEO OUT

for NTSC M only

CUT OFF

VERTICAL CENTRATURE

ON-OFF

10
2Vpp

11
V 1.2Vpp

12
H 2Vpp

13
H 0.9Vpp

14
H 1.3Vpp

15
H 6Vpp

16
H 1Vpp

17
H 1.2Vpp

18
H 1.7Vpp

19
H 1.5Vpp

20
H 550Vpp

ADJUST L25/R205 FOR PROPER HORIZONTAL WIDTH

MIT L25/R205 HORIZONTAL-AMPLITUDE EINSTELLEN

REGLER L25/R205 POUR OBTENIR UNE CORRECTE AMPLITUDE HORIZONTALE

REGOLARE L25/R205 PER UNA CORRETA AMPIEZZA ORIZZONTALE

ADJUST R203 FOR PROPER TRAPEZIUM

MIT R203 TRAPE.ENTZERRUNG EINSTELLEN

REGLER R203 POUR AJUSTER LE TRAPEZE

REGOLARE R203 PER CORREGGERE IL TRAPEZIO

ADJUST R200 FOR PROPER PIN-CUSHION

MIT R200 KISSEN EINSTELLEN

REGLER R200 POUR AJUSTER LE COUSSIN

REGOLARE R200 PER CORREGGERE IL CUSCINO

AUTOMATIC GAIN CONTROL

AUTOMATISCHE VERSTÄRKUNGSREGELUNG

CONTROLE AUTOMATIQUE DU GAIN

CONTROLLO AUTOMATICO DEL GUADAGNO

F-16 R3

489.04B

* Only for mono
\# Only for mono bg
@ Only for stereo
○ Only for BG/L

IC13 HEF4053 — PHILIPS

IC1 TEA 5101A — TS

IC10 TDA 8395 — IC11 TDA 4661/65 — IC12 LM7808 — PHILIPS

IC18 TDA8145 TDA4950

SC1 — SC2

TR10 BC548B — TR29 BC848B — TR20 BC338 — TR2 BC558B — TR4 BC558B — TR3 BC558B — TR1 BC422 — TR19 BC548C — TR21 BC639

D25 1N4148 — D24 1N4148 — D26 1N4148 — D28 BAT81 — D30 1N4148 — D62 1N4148 — D20 8V2 — D61 5V1 — D45 BY448 BY228 — D46 1N4148 — D48 1N4148 — D49 ZPD 22V — D47 BA157 — D50 BA157 — D52 BA157 — D53 BA157 — D54 BA157 — D51 1N4001

L15 8V53-137 10MH — L16 5.6µH — L17 8V52-105 8V52-109 — L18 8V53 -128 — L19 8V53 -120 — L22 8V53 -139 610µH — L29 8V53 -139 610µH — L25 (90) 8V53-131 — L20 (110) 8V53-139 610µH — L300 — L301 — L302

T2 8V42-43 — T3

VERTICAL CENTRATURE — MOUNTED L22 & L29 OR MOUNTED L20

90° # 110°

PIP H — PIP

VIDEO IN — VIDEO OUT — RIGHT — LEFT — VIDEO — BAT — FOCUS — G2

+5V FROM L26 — +12V

J205 NOT FOR OSC — J206 NOT FOR DSC — J207 NOT FOR OSC

J155 220 — J184 220 — J163 220 — J136 560 — J86 560

SYMBOLES	
CAPACITORS	RESISTORS
MELF	MELF
MYLARD CER	FUS
<200V	¼ W
200V	½ W
300V	2
400V	1 W
600V	2W
630V	2W
>650V	5W

110° ADJUST R200 FOR PROPER PIN-CUSHION
MIT R200 KISSEN EINSTELLEN
REGLER R200 POUR AJUSTER LE COUSSIN
REGOLARE R200 PER CORREGGERE IL CUSCINO

AGC AUTOMATIC GAIN CONTROL
AUTOMATISCHE VERSTARKUNGSREGELUNG
CONTROLE AUTOMATIQUE DU GAIN
CONTROLLO AUTOMATICO DEL GUADAGNO

FOC FOCUS
BILDSCHARFE
FOCUS
FUOCO

G2 SCREEN GRID
SCHIRMGITTERSPANNUNG
TENSION DU GRILLE-ECRAN
GRIGLIA SCHERMO

38 H 100Vpp
37 H 100Vpp
36 H 100Vpp
35 H 220Vpp
34 H 65Vpp
33 H 90Vpp
32 H 1.5Vpp
31 H 40Vpp
30 H 10Vpp
29 H 1100Vpp
28 V 1Vpp
27 H 3Vpp
26 V 8Vpp
25 V 2Vpp
24 V 22Vpp
23 V 50Vpp
22 V 2.3Vpp
21 H 60Vpp
20 H 550Vpp
19 H 1.5Vpp
18 H 1.7Vpp
17 H 1.2Vpp
16 H 1Vpp
6Vpp